REGIONAL AIR POWER WORKSHOP

RAAF RICHMOND

17-19 SEPTEMBER 1996

Edited by Wing Commander Keith Brent, CSC
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Preface</th>
<th>v</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgments</td>
<td>vi</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>viii</td>
</tr>
<tr>
<td>1. Opening Address</td>
<td>1</td>
</tr>
<tr>
<td>- Group Captain John Harvey, RAAF</td>
<td></td>
</tr>
<tr>
<td>2. 1995 Regional Air Power Workshop Overview</td>
<td>3</td>
</tr>
<tr>
<td>- Group Captain John Harvey, RAAF</td>
<td></td>
</tr>
<tr>
<td>3. Air Power Education in the Royal Australian Air Force</td>
<td>7</td>
</tr>
<tr>
<td>- Group Captain John Harvey, RAAF</td>
<td></td>
</tr>
<tr>
<td>4. Australian Defence Force Command and Control</td>
<td>12</td>
</tr>
<tr>
<td>- Wing Commander Barry Sutherland, RAAF</td>
<td></td>
</tr>
<tr>
<td>5. Royal Australian Air Force Regional Defence Engagement</td>
<td>14</td>
</tr>
<tr>
<td>- Group Captain Steve Gray, AM, MBE, RAAF</td>
<td></td>
</tr>
<tr>
<td>6. Training for Air Power - The View from Royal Australian Air Force Training Command</td>
<td>22</td>
</tr>
<tr>
<td>- Group Captain Terry Connolly</td>
<td></td>
</tr>
<tr>
<td>7. Royal Australian Navy Air Training Developments</td>
<td>34</td>
</tr>
<tr>
<td>- Captain Keith Eames, RAN</td>
<td></td>
</tr>
<tr>
<td>8. Australian Army Aviation Training</td>
<td>40</td>
</tr>
<tr>
<td>- Colonel Robert Walford, AFC, Australian Army</td>
<td></td>
</tr>
<tr>
<td>9. No 41 Wing and the Air Training Process</td>
<td>49</td>
</tr>
<tr>
<td>- Wing Commander Tim Owen, RAAF</td>
<td></td>
</tr>
<tr>
<td>10. No 81 Wing and the Air Training Process</td>
<td>57</td>
</tr>
<tr>
<td>- Group Captain John Kindler, AFC, RAAF</td>
<td></td>
</tr>
<tr>
<td>11. No 82 Wing and the Air Training Process</td>
<td>62</td>
</tr>
<tr>
<td>- Group Captain Geoff Shepherd, RAAF</td>
<td></td>
</tr>
<tr>
<td>12. No 86 Wing and the Air Training Process</td>
<td>69</td>
</tr>
<tr>
<td>- Group Captain Chris Spence, RAAF</td>
<td></td>
</tr>
<tr>
<td>13. Operational Support Group Training Issues</td>
<td>74</td>
</tr>
<tr>
<td>- Group Captain Rick Jones, RAAF</td>
<td></td>
</tr>
</tbody>
</table>
14. Current Issues and Future Directions in Training - A Headquarters Air Command Perspective
   - Group Captain Kerry Clarke, AM, RAAF

15. Air Power Training in the Indonesian Air Force - Current Issues and Future Directions
   - Kolonel Pieter L.D. Wattimena, S.IP, TNI-AU

   - Kolonel Zakaria bin Salleh, RMAF

   - Group Captain Graham Lintott, RNZAF

18. Training for Air Power in the Philippine Air Force
   - Colonel Nelson G. Esiao, GSC, PAF

   - Colonel Allan Chua, RSAF

20. Royal Thai Air Force - Pilot Training System
    - Group Captain Derek Promprayoon, RTAF

21. The Australian Defence Force Warfare Centre
    - Wing Commander Eric Bills, RAAF

22. General Discussion
    - Chaired by Group Captain John Harvey, RAAF

23. 1996 Regional Air Power Workshop - Summary of Proceedings
    - Group Captain John Harvey, RAAF

24. Round Table Discussion on Cooperation in the Region
    - Chaired by Wing Commander Martin Susans

25. Closure
    - Group Captain John Harvey, RAAF
PREFACE

Papers have been printed as provided by the authors, with only minor changes to achieve some consistency in layout, spelling and terminology. The transcripts of the discussions which followed delivery of the papers have been edited for relevance, clarity and brevity. Copies of the edited transcripts were sent to authors for comment before publication.

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Keith Brent
Air Power Studies Centre
Canberra

January 1997
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Singapore

Colonel Allan Chua - Republic of Singapore Air Force
Major Calvin Chin - Republic of Singapore Air Force

Thailand

Group Captain Derek Promprayoon - Royal Thai Air Force
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1AFDS</td>
<td>No 1 Airfield Defence Squadron</td>
</tr>
<tr>
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<td>No 1 Operational Support Unit</td>
</tr>
<tr>
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</tr>
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</tr>
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<td>No 2 Flying Training School</td>
</tr>
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</tr>
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</tr>
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<td>No 114 Mobile Control and Reporting Unit</td>
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<td>No 323 Air Base Wing</td>
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<td>Australian Defence Force Air Defence Systems Training Centre</td>
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<tr>
<td>ABRI</td>
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<td>Air Base Wing</td>
</tr>
<tr>
<td>ACAUST</td>
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</tr>
<tr>
<td>ACFT</td>
<td>Aircraft</td>
</tr>
<tr>
<td>ACM</td>
<td>Air Combat Manoeuvres/Manoeuvring</td>
</tr>
<tr>
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<td>Air Combat Manoeuvring and Instrumentation</td>
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</tr>
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<td>Air Defence Controller (RAAF)</td>
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</tr>
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</tr>
<tr>
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<tr>
<td>ADFHS</td>
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</tr>
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</tr>
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<td>Air Defence Ground Environment</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>--------------</td>
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</tr>
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</tr>
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<td>Air Surveillance Operator Manager</td>
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<td>Air Surveillance Operator Supervisor</td>
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</tr>
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<td>Australian Basic Aptitude Test Station</td>
</tr>
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</tr>
<tr>
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</tr>
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</tr>
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</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
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</tr>
<tr>
<td>COMAUSNAV AIR</td>
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</tr>
<tr>
<td>COMFLOT</td>
<td>Commander Flotillas</td>
</tr>
<tr>
<td>COMNORCOM</td>
<td>Commander Northern Command</td>
</tr>
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</tr>
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<tr>
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<td>Conspicuous Service Cross</td>
</tr>
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</tr>
<tr>
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</tr>
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</tr>
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<tr>
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</tr>
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<td>Developmental Flying Training</td>
</tr>
<tr>
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<td>Deployable Joint Force Headquarters (Land)</td>
</tr>
<tr>
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</tr>
<tr>
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<td>Ground Controlled Interception</td>
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<td>General Flying</td>
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<tr>
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</tr>
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<td>Junior Officer Initial Course</td>
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</tr>
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</tr>
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<td>Over-the-Horizon Radar Supervisor</td>
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<td>Philippine Air Force</td>
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<td>PAS</td>
<td>Precision Air Support</td>
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<td>PC</td>
<td>Personal Computer</td>
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<td>Permanent Joint Headquarters (UK)</td>
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<td>Program of Major Service Activities</td>
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<td>Qualified Flying Instructor</td>
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<td>Revolution in Military Affairs</td>
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<td>Simulator Operator</td>
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<td>SISIR</td>
<td>Singapore Institute of Standards and Industrial Research</td>
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<td>Synthetic Navigation Trainer</td>
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<td>SOACE</td>
<td>Schedule of Overseas Activities and Combined Exercises</td>
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<td>SOI</td>
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<td>TMP</td>
<td>Training Management Plan</td>
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<td>Tentara Nasional Indonesia - Angkatan Udara (Indonesian Air Force)</td>
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<td>United States Navy</td>
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<td>VIP</td>
<td>Very Important Person</td>
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<td>WEAPNSFLT</td>
<td>Weapons Flight</td>
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<td>WO</td>
<td>Warrant Officer (Army)</td>
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<td>WWW</td>
<td>World Wide Web</td>
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<td>XO</td>
<td>Executive Officer</td>
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OPENING ADDRESS

Presented by Group Captain John Harvey
Director Air Power Studies Centre
Royal Australian Air Force

Introduction

On behalf of the Chief of the Air Staff, Air Marshal Les Fisher, I would like to welcome you all to Richmond for the fourth CAS Regional Air Power Workshop.

Air Marshal Fisher has asked me to particularly welcome our overseas guests and the representatives from the Royal Australian Navy and the Australian Army.

It is also a rare and valuable opportunity for so many RAAF officers at this level to get together. It is the chance to hear and discuss with others their views that makes these Workshops so important.

The title this year is *Training for Air Power*, current issues and future directions. The title was selected by delegates last year - chosen because there are likely to be shared experiences and issues regarding training and the prospect for future cooperative activities.

History

A little bit of history of the Regional Air Power Workshops before we look at this year’s Workshop.

As I said this is the fourth Workshop, initiated as a result of a conference conducted in Melbourne in October 1992. That conference, titled *The Qualitative Edge*, brought together speakers from the most senior levels of regional air forces and senior academics with the aim of improving communication between Air Forces of the region.

As a result of that conference, the first Regional Air Power Workshop was held in Darwin in August 1993 with the dual aims of further strengthening regional ties and promoting a wider understanding of air power. Attendees were at the Group Captain/Colonel level and all presentations were given by the RAAF.

The second Workshop was held in Darwin in August 1994 and addressed both theoretical and practical issues associated with the application of air power as well as the potential for regional cooperation activities. The Workshop was a major shift away from the first in that the range of participants was expanded to include representatives from the RAN, Australian Army and Department of Defence. Most importantly, presentations were not limited to RAAF personnel but included regional Air Forces as well the expanded Australian perspective.
The third Workshop, held in Townsville last year, covered the important topic of doctrine and doctrine development. Written doctrine is a topic that has not received much attention from air forces in the past but is seen as increasingly important.

This year, as a result of suggestions from last year's attendees, we will consider the topic of *Training for Air Power*, specifically looking at current issues and future directions, particularly opportunities for increased cooperation. As for last year, we have a wide range of participants with extensive knowledge of the role of air power in regional security, and some who specialise in various aspects of training.

During the conference I would like you to consider possible topics for next year's Workshop. Possible topics to consider include:

- Surveillance,
- Logistics Support,
- Campaign Planning, and
- Simulation/War Gaming.

While aiming to follow the program in general, the main aim of the Workshop is to generate discussion - the question and answer periods and round table discussions are probably even more important than the presentations themselves.

As with previous years, we will be publishing the proceedings of the Workshop but this year we intend including the discussions as well.

Again, on behalf of Air Marshal Fisher, welcome to the 1996 Workshop.

Thank you.
1995 REGIONAL AIR POWER WORKSHOP OVERVIEW

Presented by Group Captain John Harvey
Director Air Power Studies Centre
Royal Australian Air Force

INTRODUCTION

The theme of the 1995 Regional Air Power Workshop was *Doctrine and Doctrine Development*, until lately something of a ‘dirty word’ for air forces but becoming increasingly important and increasingly accepted.

Defending Australia 1994 (DA94)

We started the Workshop with a presentation by Mr Peter Jennings from International Policy Division on the Defence White Paper - *Defending Australia 1994*. He pointed out that the key thrusts of DA94 were self-reliance, maintaining the US alliance and regional cooperation. He also noted that regional cooperation is very much in Australia’s own interests and activities it conducts will be based on those interests.

Doctrine Developments in the RAAF

My own presentation on doctrine developments in the RAAF pointed out that we are currently well served by our doctrine and the development process and that no formal changes would be made for the next 12 months. While no changes are planned, the requirements of developing effective joint doctrine and what some have seen as the Revolution in Military Affairs (RMA) mean there are influences at work that must be considered.

Since that Workshop, our CAS has directed that a major review of doctrine should be carried out and the Air Power Studies Centre has started that review.

Doctrine Developments in the RAN

Captain Jack McCaffrie, RAN then discussed doctrine developments within the RAN. While there appears to be considerable reluctance to document Navy doctrine, there is significant pressure to ‘follow suit’ with the other Services, particularly as the RAN is committed to developing their single Service annex to joint doctrine at the operational level.

Of interest is that the USN and RN have both documented their doctrine and I believe it is likely that the RAN will need do likewise.
Developments in Army Doctrine

Colonel Adam Fritsch discussed the state of play in terms of doctrine in the Australian Army. While doctrine development is well in place, there is a fundamental difference between Army and Air Force in terms of what constitutes doctrine. Army considers doctrine extending down to what we in the Air Force would consider tactics and procedures.

RAAF Policy on Defence Cooperation

Group Captain Steve Gray gave a RAAF policy perspective on the process of defence cooperation. He pointed out that the aim was for mutual benefit and that there was scope to improve the effectiveness of activities conducted. And while the RAAF’s technical edge is disappearing in the region, as Air Forces come closer together in terms of technology, there is scope for a more equal exchange of information.

Doctrine Development in the RSAF

Lieutenant Colonel Jimmy Tan outlined the status and process of doctrine development in the Republic of Singapore Air Force. He said Singapore’s small size places unique requirements on its armed forces and its Air Force’s doctrine is a response to those requirements. Because of Singapore’s small population size it must concentrate on the use of advanced technology and fighting as an integrated force to reduce manpower requirements.

Doctrine Development in TNI-AU

Kolonel Ariyanto Saleh then summarised Indonesian Air Force doctrine. While in terms of specific roles of aircraft we may all have much in common, the sociopolitical role of the Indonesian Armed Forces significantly expands their responsibilities.

Since that time TNI-AU has had its first Air Power Conference, as part of its 50th anniversary. Recently Kolonel Mahadi from the Air Force Staff College at SESKOAU spent four months at the Air Power Studies Centre (APSC) doing some initial work on documenting TNI-AU doctrine and possibly establishing an organisation like the APSC.

Doctrine Developments in the RTAF

Group Captain Pongpan reviewed the status of doctrine in the Royal Thai Air Force (RTAF). The starting point for their doctrine was that of the USAF but it has been extensively modified for their own requirements. RTAF doctrine recognises a clear distinction between strategic and tactical campaigns.

Doctrine Developments in the Philippine Air Force

Colonel Navarrete discussed how the Philippine Air Force (PAF) was handling the process of evolution from concentrating on internal issues to external security concerns. They are
concentrating on getting the doctrine in place before they make major changes to force structure and they have a well developed process in place for doctrine development/review.

Since then there have been some developments in a published doctrine for the PAF.

**Doctrine Developments in the Royal Brunei Air Force**

Major Napiah from the Royal Brunei Air Force (RBAF) discussed how, even though his Air Force was very small, the need for an established doctrine had been recognised. He then went on to describe the RBAF and development currently going on, particularly in terms of base and airfield development.

**Doctrine Developments in the Royal Malaysian Air Force**

Lieutenant Kolonel Akhtar from the Royal Malaysian Air Force (RMAF) discussed how his Air Force had undertaken a ‘paradigm shift’ in their concept of operations, forced on them by the introduction of new aircraft types, particularly the MiG-29.

Since the Workshop, the RMAF has published its own basic air power doctrine. Considerable development has also gone into doctrine development at the operational level, with a number of publications now complete.

**Doctrine Developments in the Royal New Zealand Air Force**

Group Captain Kel Crofskey from the Royal New Zealand Air Force (RNZAF) explained what he called the Doctrine Development Loop. He explained how his small Air Force had acquired platforms and technology from other air forces but had adapted the way they were operated to achieve a qualitative advantage at the tactical level.

**Discussion Period**

In the discussion period the feeling was that there was general agreement on air power doctrine issues and the development process but the more complex area was developing effective joint doctrine.

**Tactical Level Doctrine**

The Officers Commanding the RAAF’s Operational Wings then discussed doctrine at the tactical level - where considerations are generally about ‘how to do’ rather than ‘what to do’.
Operational Level Doctrine

Group Captain Geoff Roberts from RAAF Air Command gave a presentation on doctrine at the operational level - otherwise known as campaign planning. At this level it is essential that the plan be closely aligned with the Joint Commander’s campaign plan.

There is still no formal published doctrine at this level for the RAAF but one of the CAS Fellows will be looking at this in 1997.
AIR POWER EDUCATION IN
THE ROYAL AUSTRALIAN AIR FORCE

Presented by Group Captain John Harvey
Director Air Power Studies Centre
Royal Australian Air Force

INTRODUCTION

I am sure as soon as we mention training we think of flying training with perhaps some reference to ground training as well.

I want to expand the title from *Training for Air Power* to include education as well. Education is more general in nature than training and is not aimed at skills for a specific task.

Perhaps one of the failures of air forces in the past has been the preoccupation with flying as an end in itself and forgetting about the need to educate people in broader issues, such as the application of air power, particularly in terms of ‘what we do with it’ rather than ‘how we do it’.

The Need For Education

Following on from that, thinking has generally been at the tactical level. As General Fogleman, CSAF recently said:

> I have any number of officers who can operate one aircraft but very few who can operate 100.¹

Lack of attention to thinking and educating for the higher levels of command is a large part of why few airmen have risen to the very highest levels of command in the ADF and other defence forces. Part of that education process is the development of doctrine; the RAAF took 70 years to publish its first Air Power Manual.

AIR POWER

The Value of Air Power

Air power is increasingly providing the teeth of armed forces regardless of which Service is considered. It has been estimated that in the United States 65 per cent of the total defence budget is spent on air power of one form or another (including space).²

² Estimate from Colonel Phil Meilinger, Dean of the School of Advanced Air Power Studies, Maxwell Air Force Base.
The general emphasis on air power for armed forces is reflected in current ADF force acquisition proposals:

- The RAN is seeking to acquire helicopters for all major vessels, and cruise missiles for its submarines.
- For the Army, attack helicopters and increased tactical air transport capabilities are high on the wish list.

As ever there is little question about the value of air power, rather, the question is who owns, operates and controls it.

The Need to Understand Air Power

The current Chief of the Defence Force (CDF), when examining the command arrangements of the ADF in early 1988, commented on the extent to which air power is understood within the Australian military. He concluded that the proper use of air forces had not been well understood within the Australian military and air power had often been misapplied. And much of the blame for this he placed on the RAAF itself:

Too often air power is portrayed as an end in itself rather than the pervasive influence on all forms of operations... The only remedy is for the air force to provide exemplary support in all its forms; to itself understand the importance of its contribution to success in all forms of operations on land, sea or in the air. In turn it must educate others in the effective use of all air assets.²

Education is essential because:

If people don’t understand what they are doing, they do what they understand.

AIR POWER EDUCATION IN THE RAAF

The RAAF commenced an extensive air power education program in 1992. It had three levels:

- a formal program set within the education and training context;
- informal, unit level input; and
- input to the other Services, wider defence community and the general public.

The aim was education rather than public relations or propaganda. That means critical analysis, not just pushing the good points.

Education within the RAAF itself was seen as particularly important because the direct application of air power relies on relatively few warriors. Almost all of those in the Air

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Force who contribute to the generation of fire power and manoeuvre are far removed in time and space from the physical application of air power against the target. Accordingly, a key educational objective is the understanding of the complex interdependencies of air forces and the ability to relate the contribution one’s own activities make to the air power exercised by the RAAF. This the concept on which all unit level air power education is based.4

Review of Air Power Education

In 1995 a review of the effectiveness of the program was carried out by Squadron Leader Jim Walker as a CAS Fellowship. During the review over 450 people were either interviewed or surveyed.

Findings of the Review

Key findings from the review were as follows:

- **Formal Program** (as part of RAAF formal training courses):
  - generally effective (RAAF officers/airmen now have a far better understanding of air power issues than before the program);
  - needs an overall philosophy (the recommendation was that it be inspirational, motivational, and relevant); and
  - a review of syllabus objectives is required to ensure they are integrated throughout a member’s career so they build on each other (all course terminal objectives have now been addressed as a prerequisite to reviewing syllabus objectives).

- **Unit Level Program**:
  - goals not achieved (almost nothing being done);
  - will not be achieved unless strategy is changed (units too busy for formal training);
  - need to emphasise to COs their role in educating their personnel (indoctrination programs important);
  - strategy is to change attitudes as part of the formal education process; and
  - seek COs and supervisors’ support to encourage subordinates (convince all supervisors that it is their duty to ensure their personnel know how what they do contributes to the overall generation of air power).

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• Defence Organisation, Wider Community and Regional Nations:
  - largely successful (awareness of issues is generally higher); and
  - exception is general public (level of awareness has not raised sufficiently).

Actions Taken

Formal Courses. Tailor air power education to all formal courses. Courses involved to date include:

• Officers’ Courses:
  - Junior Officer Initial Course
  - Basic Staff Course
  - Command and Staff Course
  - Commanding Officer’s Course
  - Administrative Officer Basic Course
  - Intelligence Officer Basic Course
  - Supply Officer Basic Course
  - Air Traffic Control Course

• Airmen Courses:
  - Recruit Training Course
  - Corporal Promotion Course
  - Sergeant Promotion Course
  - Flight Sergeant Promotion Course
  - Warrant Officer Promotion Course

• Other Services and Joint Service Courses:
  - Navy Staff College
  - Army Command and Staff College
  - Joint Services Staff College
  - Maritime Studies Program
  - Malaysian Defence College (MPAT)

Airman Fellow. One of the findings from Squadron Leader Walker’s review was that the APSC and study of air power issues generally was seen as an ‘officers only club’. To dispel this perception, an NCO/SNCO Fellow position has been established at the APSC.

Public Awareness. In an attempt to raise the level of public awareness of air power issues, APSC papers are now published on the Internet on the WWW.
DISCUSSION

Group Captain Clarke (RAAF): Do you think it reasonable or necessary to train/educate our members the way we do? Is the expenditure involved necessary and what are the resource implications?

Group Captain Harvey (RAAF): Air power education is now an integral and ongoing part of all RAAF members’ training. Lectures on air power are included in all formal training courses from initial Recruit Course and JOIC through all the specialist courses and promotion courses to Command and Staff College. The subject is addressed in increasing depth as members progress up the ranks throughout their career. The increased awareness of air power issues is particularly noticeable now on airmen promotion courses - I’ve recently been to both Corporal and Sergeant Promotion Courses and the depth and level of knowledge displayed by our airmen and airwomen is increasing all the time. All RAAF members now appear to have a much better and broader knowledge of air power and on what the RAAF is all about.

Group Captain Shepherd (RAAF): I can support Group Captain Harvey regarding the increased knowledge of our more junior members. You can’t treat the boys in the field as if they know nothing about air power any more. If you come up with a bad campaign plan, the troops and line pilots will notice and they will tell you.

Group Captain Connolly (RAAF): How long can the Air Force bear the cost of long courses? Can we keep doing things like taking people out of their jobs for 12 months for Staff College? I believe such courses may be under threat due resource costs and we may need to look at other ways of achieving the required result.

Group Captain Spence (RAAF): While I agree with Group Captain Connolly, I don’t think we can do courses like Staff College at the workplace. I believe we may need to look at intensifying and condensing the formal courses so that people don’t get taken away from their jobs for too long.

Colonel Walford (Army): The Land Commander is pushing for people to do courses and training while remaining at their unit. But we need to accept and allow time for people to do the training. We are looking at having additional people on a unit (above CE) to allow people time for education. Army is also looking at setting up ‘regional education centres’ in principal areas. The concept being that a unit would book the training centre for a period of time and people would do ‘distance training’ in blocks (maybe two to three hours at a time).
AUSTRALIAN DEFENCE FORCE
COMMAND AND CONTROL

Presented by Wing Commander Barry Sutherland
Air Power Studies Centre
Royal Australian Air Force

INTRODUCTION

In January 1996, the Chief of the Defence Force (CDF) announced the implementation of the Australian Defence Force (ADF) Revised Command Arrangements Project. The basis for the Project was a need for a more cohesive command and control system having greater interaction among the single Service components to produce an improved responsiveness to Australia's defence needs. Among the reasons for the Project articulated by CDF was the need for the ADF to use the same command and control organisation in peace that it would use in conflict.

ADF REVISED COMMAND ARRANGEMENTS PROJECT

To implement the Project, a Tri-Service Team (TST) has been established, comprising representatives from the single Services and Headquarters Australian Defence Force (HQADF). To provide guidance to the TST and ensure consistency in decision-making, CDF has issued a number of guiding principles. Among these principles are the following:

- The basis of the command and control organisation will be in componentry, rather than integration, to ensure that the strength of the revised organisation draws on the strength of the single Services. The work of the components will be coordinated through an overarching joint staff.

- Matrix management will be applied with interactions being made diagonally, as well as horizontally, to reduce the time and effort expended in the past through vertical interactions only.

- Matrix management will also allow commanders expedient access to advice without having to own the source of that advice.

- The revised organisation is to be accomplished on a resource neutral or savings basis.

- Collocation of like functions at all levels is to occur wherever possible.

- The NATO system of 'J staff' organisation is to be adopted.
• Standard and improved processes, procedures and terminologies are to be applied as much as possible for ease of communication and to avoid duplication.

**Overseas Experience**

In establishing the revised organisation, there was little overseas experience to draw upon. For example, the organisation used by Coalition Forces in the Gulf War had inconsistencies. While the Joint Air Component Commander was collocated with the Commander-in-Chief (CINC), General Schwartzkopf, the Maritime Component Commander was located with a task group at sea, while the Land Component Commander was located with his fielded forces, using his Chief of Staff in a liaison role at Schwartzkopf’s Headquarters.

In the UK, the Permanent Joint Headquarters (PJHQ) is being established at Northwood. Under the PJHQ are three Joint Force Headquarters (JFHQ). However, these JFHQs are not permanent and organisationally consist of staff who are shadow posted from other units in the UK Defence Forces.

In Canada, the transition to a unified defence force nearly 30 years ago had not produced a corresponding change to an integrated command and control system. During the period of unification, the single Service Headquarters have been located apart at Winnipeg, Halifax and Montreal. Only recently has the decision been made to collocate the single Service chiefs at the National Defence Headquarters in Ottawa.

**CDF’s Revised Command Arrangements**

Under CDF’s revised command arrangements, the three single Services and HQADF will be formed into one strategic level headquarters, with most non-strategic responsibilities being transferred to a lower level, but with the understanding that some retained functions may be non-strategic. At the operational level, the current three environmental headquarters will be incorporated into a newly established Headquarters Australian Theatre (HQAST) with the Commander (COMAST) being responsible for operational functions in the defence of Australia, as well as preparedness functions. Under COMAST will be three joint force headquarters: Headquarters Northern Command (HQNORCOM) and two deployable JFHQs, one afloat and one land.

To date, reviews have been conducted by the three single Services and HQADF of the strategic level functions and the organisational requirements. At the operational level, on-site reviews have been conducted by the TST of the organisational proposals for HQNORCOM and the interim HQAST. Reviews of the organisational proposals for the mature HQAST, plus DJFHQ(L) and the afloat DJFHQ still have to be done. Implementation of the revised organisations is scheduled for 1 Jul 97. Although the Minister of Defence has recently announced the conduct of a Defence Efficiency Review, the impact of the this review on the Revised Command Arrangements Project has not yet been determined.

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ROYAL AUSTRALIAN AIR FORCE
REGIONAL DEFENCE ENGAGEMENT

Presented by Group Captain Steve Gray, AM, MBE
Director of Warfare Policy and Planning
Royal Australian Air Force

OBJECTIVES OF REGIONAL ENGAGEMENT

Regional Defence Engagement encompasses all those activities and policies that help to influence the regional security environment so as to make armed attack less likely. The bilateral and multilateral defence relationships that have been built up over many years form the essential foundation for the future development of regional defence engagement. Not only do we regional countries have to recognise the importance of regional security to our own national security, but we have also to realise the importance of being able to influence regional security in our own interests.

Regional defence engagement is thus an integral part of Australia’s defence policy. While we must develop capabilities for defending Australia, our approach to regional engagement adds another dimension to our defence effort by seeking to minimise the likelihood of threats to our territory or interests. These two elements of our defence policy can and must work in harmony, and in harmony with alliance commitments and our interest in global security.

Regional defence engagement is not a new element in Australia’s defence policy. Ever since the second world war Australia has placed high priority on influencing the wider strategic environment to serve strategic interests. In the process, we have built a set of bilateral and multilateral defence relationships in our region, that are notable for their breadth and strength. These relationships are the essential foundation for the further development of regional defence engagement in the years ahead.

In recent years, regional defence engagement has gained greater prominence in our overall defence policy for a number of reasons. Most broadly, recognition of the emergence of a more fluid and complex regional security environment has increasingly important implications for our own security, and the need to do more to influence this environment and promote Australia’s interests within it. This trend in the strategic agenda fits in with the broader trend towards closer integration with Asia across the whole spectrum of government policies and national life.

At the same time, development in the approaches and military capabilities of our neighbours in South-East Asia has widened the scope for cooperation. Increasingly, though to differing degrees, our neighbours are interested in cooperating with the Australian Defence Force (ADF) as they address the uncertainties of post-cold war Asia. A growing focus by many on external defence rather than internal security, and the increasingly sophisticated capabilities now being acquired, mean that Australian forces and theirs have more in common, the potential for cooperation is stronger, and the consequences of discord more significant.
To meet these challenges and take advantage of these opportunities, we need to examine carefully what kinds of activities do most to further strategic interests. It may not be necessary to devote many more resources to regional engagement to achieve our objectives, but in some areas we may need to continue to re-shape our approaches.

With the exception of the Five Power Defence Arrangement (FPDA), which has an operational aspect, and the alliance with New Zealand under which we assume that we would operate alongside the New Zealand Defence Force (NZDF) in time of war, our renewed emphasis on regional defence engagement is focused on enhancing Australia's security by reducing the prospect of conflict, rather than seeking allies in case of war. This has implications for practical issues, such as the extent to which we share information and technology, collaborate on capabilities and encourage interoperability. Overall priority will be given to maintaining and enhancing our self-reliant defence capability, but there will be trade-offs between activities devoted to developing our own capabilities and those devoted to regional engagement. These trade-offs will be at the margins but we need to establish how they are to be made.

Given our strategic interests and outlook, Australia has a number of objectives in defence engagement with countries of the region:

- building strong bilateral relationships with regional countries which support Australia's defence interests by improving influence;
- assisting others to develop military capabilities and professional standards that meet their legitimate self-defence needs, and to exclude potentially hostile influences that could affect stability;
- contributing to frameworks that allow disputes to be resolved without resort to force;
- maintaining the United States strategic commitment to the region;
- encouraging China to become more involved in international interests and be more responsive to regional concerns;
- encouraging responsible defence planning based on transparency and hence moderating the growth of defence expenditure;
- discouraging strategic developments that would significantly raise the level of capability that could be used against Australia; and
- assisting Australian companies in export opportunities to sustain industrial capabilities important to our own defence.

The primary objective of Australia's regional defence engagement is not to defend the region, but to use defence relationships with regional countries to contribute to our own security. This approach also enhances the security of the region as a whole.
POLICY GUIDANCE

In addressing RAAF aspects of regional engagement policy, it is useful to review the policy guidance mechanisms in place in the ADF, which ensure that RAAF regional engagement policy is no different to that of the other arms of the ADF, or to any of the other seven programs in the Australian Department of Defence.

ADF regional engagement policy originates in its broadest sense with Government. The Strategic Policy Coordination Group comprising representation from the Departments of Defence, Foreign Affairs and Trade, and Prime Minister and Cabinet is a forum for frequent high level consultation on the full range of strategic and security related issues. The public manifestation of Government defence policy guidance is a White Paper such as Defending Australia 94 (DA94), released by the Australian Government in November 1994.

Guidance in the White Paper is translated by Headquarters ADF into terms that the military can come to grips with, and is issued as a CDF Directive entitled the COAD - CDF Overseas Activities Directive. This document provides Defence agencies with the background and objectives of overseas activities, provides guidance on priorities for the allocation of resources and gives specific country guidance for engagement with all regional nations. The COAD is issued annually in March and is updated as circumstances change.

Having been issued with the COAD the single Services formulate programs of overseas activities which are incorporated by HQADF into a single document known as the SOACE - Schedule of Overseas Activities and Combined Exercises. The SOACE is then passed to the Minister for Defence for approval.

CONSULTATION ON REGIONAL ENGAGEMENT ACTIVITIES

Regional engagement is ideally a mutually beneficial activity, it is therefore important that mutual objectives are agreed at the outset and that regular consultation is achieved to ensure that activities remain relevant to all parties.

In our region, bilateral consultation is commonly achieved through a three-tiered approach to defence cooperation. At the top is the Defence Policy Discussions, usually at two or three star level, then follows the Review Committee talks at two star level and the sub-committee or Working Group talks at one star.

Examples of this structure include:

- the MAJDP - Malaysia Australia Joint Defence Program;
- the JASINCG - Joint Australia Singapore Coordination Group;
- the AIDCC - Australia Indonesia Defence Coordination Committee; and
- the recently formed JATDCC - Joint Australia Thailand Defence Coordination Committee.
In the multilateral forum, another layer may be added to the top, such as the BRITANZ Principals, or US MILREPS meetings at four star level, or the FPDA Ministers Meeting at the political level.

**ADF REGIONAL ENGAGEMENT ACTIVITIES**

The following broad groupings cover the range of activities that can be undertaken to serve strategic interests in the region. Not all are appropriate to all countries; we should seek a mixture of activities that reflects the shared interests of particular countries.

- **Defence Cooperation Programs (DCPs).** DCPs have long played a valuable role in developing defence relationships. The relativities are now changing, and increasingly the countries concerned have defence budgets that provide a capacity to pay for what has previously been given to them. Many countries now meet DCP costs in areas such as travel, training, exchanges and exercises. Others are moving in this direction and our approach is to encourage the achievement of mutual DCP benefits through the mutual commitment of resources, including financial resources.

- **Focused approach to high level contacts.** High level contacts between senior ADF and Defence officials and their regional counterparts can be valuable in laying the basis for common approaches and developing areas of cooperation. Personal contact is important in opening doors and doing business in most countries. There is a need, however, to ensure that these contacts are used for more than ‘reciprocating hospitality’ or ‘getting to know you’ purposes. Visits must be well targeted to gain access to people who can influence policy outcomes.

- **Exchanges on strategic and defence planning processes.** Visibility of defence planning processes promotes regional reassurance and can lead to reduced defence expenditure. The types of information that could be published include defence planning documents, planning processes, equipment acquisitions and submissions to the register of conventional arms transfers. Each country should expect to get value for what it gives, and, hence, should encourage exchanges from other countries.

- **Defence participation in regional security dialogue processes.** These processes are in their early stages and are currently primarily the province of foreign ministries. However there is scope for defence involvement as members of delegations.

- **Intelligence exchanges.** Engagement on intelligence matters incorporates a wide range of activities; including information sharing, conferences, and training within the constraints of the cooperative arrangements with partners. We could contribute to assessments on global issues, peacekeeping operations, counter-terrorism and trafficking in drugs and weapons. Intelligence exchanges are a sensitive area for most countries and may take some time to develop. Nevertheless, they help to build confidence irrespective of any information which may be exchanged.
Exercises. Exercising provides an opportunity for our forces to familiarise with the regional operating environment, for others to see our forces and, likewise for us, to observe the forces of regional countries. Exercises should be conducted on a cost sharing basis.

Training and personnel exchanges. Training is an area in which Australian expertise has been valued and our training facilities are well regarded in the region. We can share these facilities to assist regional countries improve their military competence and professionalism. Additionally, training can establish useful linkages with personnel of other defence forces and provide an insight into alternative approaches to military issues. In the RAAF priority is given to courses and exchanges that promote personal and professional contact between defence organisations and military forces. Such exchanges focus on reciprocal transfers of skills, and on building professionalism in technical areas as well as in other areas, such as logistics management and force structuring.

Use of Australian facilities. The facilities which show greatest promise for use by regional countries are those associated with air force training, conventional explosives testing, maritime training and exercising and counter-hijack training. However, in all cases, arrangements for such access must be considered on a case by case basis to ensure that they do not supplant ADF activities, and that Australian rights and interests are preserved. Appropriate benefits, such as reciprocal access, financial return, industry participation and/or combined exercise opportunities may be sought in return.

Logistics Cooperation. With the increasing sophistication of regional defence inventories, logistics cooperation is becoming a growth area for regional engagement. Logistics cooperation should hold benefits for both parties. For the donor, it should provide economic efficiency, and the mutual exchange of data on relevant weapons systems. It should also be used to support defence industry and defence sales interests.

Defence Science Cooperation. Defence Science and Technology has a role in regional defence cooperation, and as regional countries develop their capabilities there will increasingly be advantages in seeking to develop genuine cooperation in this area. At risk in such cooperation could be longstanding associations with non-regional organisations and the issue of transfer of intellectual property; hence close management of this type of cooperation is essential.

Resource and Financial Management Cooperation. In recent years, Australia has responded to invitations from several regional countries to assist in improving management practices in their defence organisations. We have conducted seminars focused on corporate planning, project management, better information systems and managing for results. These programs have been targeted on Defence organisations, rather than improving public sector performance more widely. For reasons of economy and affordability, such courses concentrate on ‘training the trainers’ and recipients are encouraged to meet the costs of such training.

Defence Industry. Defence should use its contacts to support industry’s interests in either selling to or collaborating with regional countries. Thus, a nation is able to
exploit commercial opportunities that arise through defence engagement, and through that become more firmly part of the region.

- **UN sponsored peacekeeping operations.** Australia has been called upon to provide resources for UN sponsored or endorsed peacekeeping operations. These operations should contribute, either directly or indirectly, to our strategic interests. When we participate, we should seek opportunities to progress our broader interests in regional engagement. Indirect benefits of relevance within the region will include provision of training opportunities for the ADF, encouragement of a sense of strategic community with regional participants and the provision of opportunities for operational cooperation with regional forces.

We should not expect to undertake all of these activities in each relationship, but we should seek a mixture of activities that reflects our mutual interests. We should not pursue particular activities with a view to replicating the Australian Defence organisation, its structures or administrative processes in other countries. Particularly in the South Pacific, we should be careful not to introduce structures and technologies that cannot be operated or maintained without excessive levels of Australian support.

### ADF REGIONAL ENGAGEMENT RESOURCES

In recent years there has been increasing pressure on operating budgets. The ADF has reduced its training activities to a minimum to meet the levels of readiness required for the defence of Australia. If the ADF were to undertake significantly more activities with regional forces, there would be implications for existing training programs.

The most costly area of cooperation is combined exercises involving regional countries. The CDF Overseas Activity Directive (COAD) and Schedule of Overseas Activities and Combined Exercises (SOACE) give us the tools to balance resources allocated for regional activities against those allocated to unilateral training and training with the United States.

Australia's Defence Cooperation budget for 1995/96 is some $78 million, and a similar allocation is planned for 1997. Almost 40 per cent of this budget is allocated to training and study visits, both in Australia and overseas; 30 per cent is allocated to meeting the costs of personnel on attachments and exchanges; and a further 30 per cent is allocated to capital equipment projects, particularly the Pacific Patrol Boat Project.

In addition to the increasing closer relations between the Air Power Studies Centre (APSC) and regional air forces, other RAAF educational institutions continue to be involved in providing places for regional air force personnel. For example, the RAAF Command and Staff Course and the Basic Staff Course regularly offer places to foreign students, and personnel from regional countries have been included on certain supply and explosives training courses. In addition, numerous technical and operator courses are conducted at RAAF training schools throughout the country. Also, training teams and study visits from Australia have been sent into the region to assist in setting up training establishments. Most trainees coming to Australia start their course at the Defence International Training Centre at Laverton which provides an important opportunity for overseas personnel to understand the Australian culture and military terminology, prior to undergoing specific courses.
Airman-to-airman talks have been conducted periodically in the region over the years. The current Chief of the Air Staff, Air Marshal Fisher, is keen to establish an annual program of formal bilateral talks at three star level.

CONCLUSION

Over the next 15 years, the strategic environment in Asia and the Pacific is likely to be more demanding and to be determined more than ever by the policies and approaches of the regional countries themselves. In these circumstances, Australia’s engagement with regional countries as a partner in determining the strategic affairs of the region will be an increasingly important element in ensuring stability. We will develop our dialogue on strategic and defence issues with key countries in the region, and we will aim to promote an environment which sustains a stable pattern of strategic relationships and avoids destabilising strategic competition.

The activities which we pursue with regional countries, with these broad interests in mind, will include bilateral programs aimed at cooperation in developing defence capabilities and professional standards appropriate to the legitimate needs of the countries concerned. We will continue to foster, through dialogue, an accurate understanding of Australia’s strategic interests and security concerns, and ensure that we in turn understand the perceptions, concerns, and capabilities of neighbouring countries. This will reflect Australia’s commitment, shared increasingly by our neighbours, to transparency in defence policy development and force planning. At the multilateral level, we will maintain our firm commitment to the Five Power Defence Arrangement. We will participate actively in processes which foster a sense of shared strategic interests and will encourage the continued evolution of cooperative security approaches in the region. We aim to ensure that these processes are inclusive and provide scope for the major powers of Asia and the Pacific to engage constructively with each other and with other countries of the region.

In the defence relationships we promote through these approaches, we will identify opportunities for defence material exports and for defence industry collaboration. This will help develop and support Australia’s defence industry base, broaden our defence cooperation with regional countries and contribute to Australia’s export performance.

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DISCUSSION

*Group Captain Harvey (RAAF)*: Regarding the specific committees, there was no mention made of The Philippines. Is there any formal structure for working groups?

*Group Captain Gray (RAAF)*: No, but given the way we are headed, I would expect we will have some sort of similar formal arrangement in the very near future.

*Group Captain Harvey (RAAF)*: You mentioned staff exchanges, are they reciprocal? Do we have instructors here as well as over there?
*Group Captain Gray (RAAF):* Not to the degree that we would like. There is no ‘one-for-one’ exchange. There are some, but it can be detrimental for the members.

*Group Captain Harvey (RAAF):* A question to Colonel Walford; is it the same for Army?

*Colonel Walford (Army):* As far as the availability of training with Army aviation is concerned, our resources are limited. However, we can provide some basic training and there already are some arrangements in place for a limited number of people from regional countries to undergo training, such as at the ADF Helicopter School.
TRAINING FOR AIR POWER - THE VIEW FROM
ROYAL AUSTRALIAN AIR FORCE TRAINING COMMAND

Presented by Group Captain Terry Connolly
Director of Operations and Air Training
Royal Australian Air Force

INTRODUCTION

Training Command has the responsibility for the delivery of both pilot and navigator training. It also manages most preparatory training for technical and non-technical airmen as well as individual officer training. To conduct this training, the Air Officer Commanding Training Command has five bases under his command and three independent schools are lodger units on Air Command bases.

Pilot training is conducted at Pearce in Western Australia by No 2 Flying Training School (2FTS). The School of Air Navigation (SAN) is located at East Sale in Victoria. Also at East Sale is Central Flying School (CFS), which conducts flying instructor training and maintains instructional standards throughout the RAAF.

Training Command does not have the responsibility for selecting trainees; this responsibility resides within the Air Force recruiting component of HQADF. Candidates are recruited and tested (apart from flight screening) within the Defence Centres in major capital cities. Pilots and navigators can enter through the Australian Defence Force Academy (ADFA) or directly through the officer training school at RAAF College.

Graduates of the aircrew training schools are posted to Air Command units to undergo operational training.

Scope

This paper will address some of the current issues effecting pilot and navigator training, as well as instructor training.

PILOT TRAINING

Pilot training is the most expensive process undertaken by Training Command. It also has the attention of most senior RAAF officers, who have pilot backgrounds. In this paper I will discuss a number of training issues including flight screening, capacity limits, pass rates and training rates.
Flight Screening

Perhaps one of the more interesting aspects of RAAF pilot training to emerge recently has been the success of the flight screening program. Candidates for direct entry into pilot training are given a ten flight screening program as civilians. The results of this screening process are used in conjunction with other testing and interview data to select those who go on to training.

The program has two profiles, one for those with less than 20 hours previous flying experience, the other for more experienced candidates. Aircraft used in screening are the CT4 and the CAP10. The CAP10 is a 'tail dragger' and particularly demanding to fly. Advanced candidates do most of their flights in the CAP10.

RAAF ADFA students will be screened for the first time this Christmas at the end of the first year at ADFA. Only after the flight screening result is known will a decision be made on which ADFA students will be put onto pilots course. The Royal Australian Navy (RAN) trains its pilots on the same course as the RAAF at present, though some change will occur in the next year. The RAN also uses flight screening for both direct entry and ADFA students.

The results of the sample of 77 students who have been tested and could have potentially passed a pilot course is the basis of the graph below (Figure 1):

![Graph showing flight screening results](image)

**Figure 1 - Impact of Flight Screening**

The graph shows a significant change has occurred in the pass rate for pilots course. The results must be viewed with caution though because the results may have been impacted by other things besides flight screening, for example the quality of the applicants may have improved and the standard of instruction may have improved also.

The following graph (Figure 2) has been compiled by the results of flight screening being fitted to a normal distribution and divided up into ten per cent increments known as stanines. If a candidate has a stanine of nine it means the score received for flight screening by that candidate was better than 90 per cent of other candidates. The graph shows that the flight
screening score, by stanine, is very closely related to the success, or otherwise, on pilots course. According to the results shown, a selection cut-off of a stanine of six or more would have achieved a pass rate of 80 per cent if it were applied on this sample. With due caution regarding other factors which could influence the result, flight screening appears to be potentially a very powerful selection tool.

![Pass Rate vs Flight Grading Stanine](image)

**Figure 2 - Pass Rate vs Flight Grading Stanine**

**Capacity Limits**

Today, the RAAF trains all its pilots in one location using one syllabus which goes from first flight to ‘wings’. The school, 2FTS, conducting this flying training has over 50 qualified flying instructors (QFIs) on staff and over 40 PC9/A aircraft available. Operating at full capacity the school can generate up to 100 sorties per day.

RAAF Base Pearce, the home base for 2FTS, has additional flying to support also. The base is the operational base closest to the Navy’s Fleet Base West at HMAS Stirling and therefore supports detachments of operational aircraft from time to time. It is also home base to the RSAF Flying Training School.

To overcome some of the congestion at Pearce, a bare base runway is also available about 20 miles north-west of Pearce at Gingin. All initial flights for students of 2FTS and RSAF FTS are conducted from Gingin.

Other steps to decongest Pearce have been taken. A parallel lane of about 6,000 feet has been built along side the main north south runway at Pearce. The parallel runway has allowed a very significant increase in the number of training circuits which continue to touch down. A remotely located ILS/TACAN is being built to the north of Gingin to allow instrument flying practice to be conducted away from runways. Improvements in airspace management have also helped the flying training effort.
Pass Rates

The pass rate for pilots course has been steadily improving for some time. Flight screening is one part of the selection process which I have already covered. Improvements in other parts of the process have occurred also. Further improvement in reliability and ease of processing will occur shortly with the introduction of the British Army Recruit Battery (BARB) of psychological tests and the AUSBAT pilot aptitude tester.

Other reasons for improved pass rates can be found in the standard of instructional technique and the training tools available. Improvements in instructional standards are continually sought but 2FTS feels the brunt of pilot drain from the RAAF. Experienced RAAF flying instructors are highly sought after, particularly by British Aerospace who have a contract with the Royal Saudi Air Force.

Orientation in instrument flying is improved using a part task trainer based on a PC. Cockpit procedural trainers are being built at present by British Aerospace to allow students to practise checks, emergency procedures and cockpit management in a simulator. Both these devices are used in syllabus activities with instructor supervision.

The standard of preflight briefing has been improved by using standardised briefings developed by the standards flight in Power Point. As each instructor has access to a PC for briefing, this overcomes at least some of the loss in instructional value caused by inexperienced instructors.

Based on the trend for pass rate at present, a pass rate of 70 per cent looks to be achievable (see Figure 3):

![PASS RATES PILOTS COURSE - RAAF ONLY](image)

**Figure 3 - Pilots Course Pass Rate**
Training Rate

The training rate for pilots has always tended to fluctuate, despite the best endeavours of the training system. A study of the rate of training which should persist into the long-term was conducted by Group Captain M. Nixon at the end of 1995. His report has been endorsed by the Chief of the Air Staff. He has recommended a steady state rate of training which addresses the RAAF’s structural need for pilots and the impact of return of service obligation (now ten years) for pilots course. The rate should be independent of loss rates for experienced pilots and can be maintained in the long-term.

The following graph (Figure 4) shows our performance in the past by course number. To improve throughput to maximum capacity of the current system, Training Command plans to run four courses per year with a steady input of numbers of students and start dates.

![Numbers of Pilots (RAAF Only) Passed Pilots Course](image)

**Figure 4 - Pilot Course Graduations**

Future Directions

Although pilot training appears to be well organised, pressures for change still exist. There is a need to cater for Army and Navy basic fixed-wing flying as both those services attempt to increase their respective training rates. At the graduate end, RAAF is dissatisfied with the program in place to take ‘wings’ graduates into the fast jet operational role. The introduction of a new fast jet lead-in aircraft provides a catalyst to look at the most efficient way of managing this process.

Both these factors could alter the way pilot training is delivered. Group Captain M. Nixon is leading two teams, one within the RAAF and a tri-Service one, looking at future training directions. One outcome which must occur from this review is the reletting of the contract with Australian Air Academy in Tamworth when it expires next year.
NAVIGATOR AND OTHER NON-PILOT AIRCREW TRAINING

The RAAF has a vision for pilot training although there is still change to come. Training for navigators and other non-pilot aircrew is subject to considerably more uncertainty. Aircraft design and system developments have changed the traditional aircrew jobs.

Navigator Training

Nowhere is the need for change more apparent than in the training of navigators. The introduction of improved technological tools has all but ended the need for a crew member who is concerned solely with the aircraft’s position.

Yet there is a place in many weapons systems for a person who is dedicated to the operation of aircraft systems (offensive and defensive) and in some weapons systems there may be room for a mission commander or coordinator. Therefore the need still exists for aircrew to be trained for other than pilot duties. Our problem in the RAAF is that we do not know what to call these crew persons. In the meantime we continue to label them as ‘navigators’ and to train them at SAN in East Sale.

Training the ‘new’ navigator has some similarities to training the old style one. The student must develop a high level of situational awareness and must be capable of playing an active part of the crew in an airborne environment. The student must be taught to think clearly under pressure. The student should have a very good understanding of the principles of modern avionics.

At present RAAF navigator training relies on airborne time in specially modified HS748 aircraft. Airborne time is supported by procedural training in a part task trainer, known as the synthetic navigation trainer (SNT). A modification program to update the avionic systems used in the HS748 and SNT is at RFQ stage.

The navigator course has been tailored for streaming into maritime or tactical (meaning low level over land) environment. The course is common up to Flight 16 but diverges into role specialisation for the remaining flights (nine or ten depending on environment). At the conclusion of training the student is awarded the navigator brevet and typically has about 65 hours flying as number one navigator.

Other Non-pilot Aircrew

The difficulty we have with defining roles for navigators is reinforced when we look at Flight Engineers. Computerisation of management tasks and improvements in display technology have allowed aircraft to be built with less requirements for a technical specialist in the crew.

The RAAF is presently conducting a review, once again lead by Group Captain M. Nixon, into the future of all non-pilot aircrew in the RAAF. The review has been prompted by the introduction of new aircraft: the C130J and the Airborne Early Warning Aircraft which have different needs for crewing than aircraft currently in service.
This study will have implications for the way in which non-pilot aircrew are trained in the future.

Training Issues

The pass rate for navigator training has remained fairly constant over time, as shown at Figure 5. An important difficulty for training has been the source of students. Many students come to navigation training after failing pilot training and can have motivation problems. Direct applicants have become more difficult to attract. Recently, the RAAF has been forced to put special effort into advertising for this role. However, given the uncertainty surrounding the role this may continue to be a difficult occupation to sell.

![NAVBAR PASS RATE](image)

**Figure 5 - Navigator Pass Rate**

The training rate for navigators was reduced about four years ago and there is now a deficit in the number of junior navigators in the RAAF. As a result, the RAAF is attempting to increase the training rate but a number of impediments have surfaced. Performance over the past few years is shown by the following graph (Figure 6):

![Navigator Course - Annual RAAF Totals CY86-95](image)

**Figure 6 - Navigator Graduates**
Obviously, the stated aim of increasing the training rate has not been achieved. The difficulties experienced in accelerating the rate of navigator training in the last couple of years revolve mainly around resources. There have been insufficient instructors and available aircraft to achieve the goal.

Instructor numbers will inevitably be tight because the shortage of junior navigators is a reason for the increased training targets. However, some improvement has been achieved by allowing overlap between those who are posting out and the navigators who have been posted in to replace them. Training Command is now looking for junior pilots to take over some of the instructional task at SAN.

Another problem has been aircraft availability. SAN does not have its own aircraft resources. It bids on Air Lift Group (ALG) for HS748 sorties. Due to a combination of maintenance inadequacies and lower than required levels of logistic support as well as conflicting task priorities, SAN has not always got the aircraft it needs.

As a result of aircraft and staff shortages, the courses at SAN have slipped as shown in the following graph (Figure 7):

![Figure 7 - Navigator Course Length](image)

**New Directions**

The result of these pressures has been a move to look for other ways of doing business. A simulator approach has been variously suggested as the way ahead. As far as is known to the RAAF, no other nation uses a simulator to do all initial training for navigators. The RAAF does not want to be the first to attempt it.

Another approach which we will trial next year is to put some of the training in civilian light aircraft. This appears particularly relevant for developing situational awareness and could even be enhanced over what is achieved in early sorties in the HS748 as the student will have a good view outside the aircraft. Training Command believes it will be necessary to have RAAF pilots fly the aircraft to ensure the students develop crew techniques which are applicable to the Air Force.
INSTRUCTOR TRAINING

Aircrew instructor training is conducted at East Sale. Flying instructors are trained at Central Flying School and navigator instructors at SAN. The target for training both of these categories has been increased to support the increased demands at the schools, together with an increased loss rate in the case of flying instructors. However, in both categories RAAF is having difficulty in finding sufficient personnel with the required experience to undertake the courses.

Flying Instructors Course (FIC) is a 17 week course. Navigator Instructors Course (NAVIC) is a ten week course. Both courses have had foreign students on them in the past and, particularly with the FIC, have the capacity to do so in the future. Foreign participation is allowed after ADF needs are met. All RAAF instructors spend time in the schools prior to returning to the operational world.

To overcome the difficulty of insufficient persons with the prerequisite experience available for flying instructor training, RAAF has recruited laterally. Although the lateral route has attracted some Army and Navy pilots, a recruitment program has been run in England and Canada also with some success.

Lateral recruits are a mixed blessing. As normal military practice has been to grow personnel, there will always be some who feel displaced by recruits coming in from the side. In the peculiar circumstances of increased training targets impacting at the same time as increased separation rates, the RAAF had no choice.

Lateral recruiting and loan personnel have allowed RAAF to maintain a higher level of experience in the instructional role than would otherwise be possible. Even with this help the general level of experience in the schools is lower than ideal.

IMPACT OF TECHNOLOGY

Before concluding this paper, a passing mention of technology should be made. Technology is having a dramatic impact on training for air power. This paper does not explore the issues fully but some have been mentioned already. Technology has redefined jobs and made some traditional training irrelevant.

Training technology improvement has made some training more cost-effective. Simulators have become more capable of emulating the real aircraft at a cheaper price. The issue has become how much emulation is warranted to achieve the desired training effectiveness.

The RAAF has taken a slow and cautious approach to introducing new training technology. A training aircraft has been seen as providing the most training transfer to operational setting for student aircrew. Part task trainers are used within the RAAF to allow students to maximise their learning in airborne sorties by practising aspects of the lesson in a controlled and non-threatening environment. Total simulation is not yet perceived to be cost-effective for ab initio students.
CONCLUSION

This paper has addressed current issues associated with pilot, navigator and instructor training in the RAAF. Although each of these subjects has been the subject of many reviews in the past, changes continue to occur which warrant partial and even total rethinks of the way ahead. Ironically, the one thing which an aircrew training system thrives on is stability, yet it appears to be the outcome least likely to occur.

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DISCUSSION

Colonel Fritsch (Army): I know you are training females as pilots, are they also being trained as navigators?

Group Captain Connolly (RAAF): Yes.

Colonel Fritsch (Army): Are there any differences in the pass rates between male and female members being trained as aircrew?

Group Captain Connolly (RAAF): The number of females involved in aircrew training to date is small; too small a sample to draw any meaningful conclusions. About all we can deduce is that females are successful.

Group Captain Spence (RAAF): We have noticed no noticeable difference between male and female aircrew members on ALG. For information, we also have a female loadmaster under training at the moment.

Colonel Eslao (PAF): You mentioned the problem of finding sufficient personnel with the right experience to undertake instructor training. We have the same problem in the Philippines getting instructors. How do we overcome this problem?

Group Captain Connolly (RAAF): We really need to train more than we need. As I mentioned, we have also tried to overcome the problem with the use of lateral recruiting and loan personnel. The British Aerospace recruitment campaign for PC9 flying instructors in Saudi Arabia is causing a particular problem at the moment.

Group Captain Lintott (RNZAF): Within the RNZAF, our flying supervision is based on instructors. A member will not become a training officer on a unit unless he has completed a QFI or QNI course, and they will not become squadron COs or flight commanders unless they have done a stint as a training officer but the ROSO (return of service obligation) requirement tends to detract from people wanting to do QFI courses.

Group Captain Kindler (RAAF): We are about to get the C130J. There is no need for a navigator to be carried on this aircraft. Therefore, will this help fix the lack of navigators problem?
Group Captain Connolly (RAAF): Group Captain Mike Nixon’s study on non-pilot aircrew includes C130J crewing aspects.

Group Captain Spence (RAAF): It is currently planned that the C130J will not carry a navigator in the strategic role. The current C130 fleet does not carry navigators in the strategic role, only tactical. But in the future, we will need a ‘mission specialist’ for the tactical role. Whether this ‘mission specialist’ will be a pilot or navigator has yet to be determined, and will be task dependent.

Group Captain Kindler (RAAF): Possibly, it may be worth considering doing away with navigators and using pilots as specialist role mission coordinators.

Group Captain Spence (RAAF): That would appear to be an expensive way of getting a mission specialist.

Group Captain Lintott (RNZAF): From a New Zealand viewpoint it has tended to be in the past that navigators have held the Air Force together at senior levels due to their pilot contemporaries leaving the Service. Therefore, we have found we can rely on navigators more than pilots to remain in the Air Force.

Group Captain Connolly (RAAF): We are now getting a ‘hole’ in the pilot category in the RAAF due to the high separation rates, which leaves inadequate numbers to provide a proper base to promote supervisors.

Colonel Chua (RSAF): Does the RAAF make much use of computer aided instruction?

Group Captain Connolly (RAAF): We are developing some computer aided instruction packages at 2FTS. But it is slow and we don’t have a pressing business case to show the cost saving. It is still very much in the exploratory stage.

Captain Eames (RAN): The Navy sees computer aided instruction as having a lot of potential. It is being used for some submarine training.

Group Captain Connolly (RAAF): The RAAF is looking primarily at computer aided instruction for any new aircraft types. It is costly to develop for existing types.

Group Captain Spence (RAAF): I’d like to comment on the earlier discussion regarding training courses. The people on operational squadrons are working hard and flying at irregular hours. You just can’t load them up with more training courses at the units. The training schools are more appropriate to conduct the courses, as they have regular hours and sabbaticals.

Kolonel Ansar (RMAF): In the RMAF, fighter pilots tend to prefer to stay on fighter aircraft, and do not want to go to slower instructional/training aircraft. Does the RAAF have the same problem?

Group Captain Kindler (RAAF): The lack of fighter pilots for QFI courses in the past has been caused primarily by a lack of experienced pilots in the fighter world. There just was nobody available with the required experience to send on QFI training. The situation is now probably a bit better and we can expect to see more fighter pilots going to QFI courses in the future.
Group Captain Harvey (RAAF): A question on QNI training. QNIs are trained at the same school as basic navigators. As a result there must be some competition for resources, with both competing for the same.

Group Captain Connolly (RAAF): Yes it is a problem - besides the basic navigator courses and navigator instructors course, we also have others, such as weapons system courses, competing for the same resources.

Group Captain Connolly (RAAF): I'd like to make a few more comments on screening of RAAF members at ADFA. As I said, ADFA screening is about to happen. The plan is that RAAF members will screened at the end of First Year and told whether they will go to pilots course at the end or not. If the answer is no, they will be free to leave if they do not wish to continue in some other area. The cost-effectiveness of screening is proven. Screening costs only about $2,500 per head. Therefore, if you save just one pilot student, then it will have paid for itself.
ROYAL AUSTRALIAN NAVY
AIR TRAINING DEVELOPMENTS

Presented by Captain Keith Eames, RAN
Commander Australian Naval Aviation Force
Royal Australian Navy

INTRODUCTION

Good afternoon gentlemen, I'm Captain Keith Eames, Commander Australian Naval Aviation Force, otherwise known as COMAUSNAVAIR. The formation of COMAUSNAVAIR on 1 March 1996 initiated a new arrangement for the management of Naval Aviation. One of the major issues affecting the Fleet Air Arm (FAA) at the moment is that of aircrew training, and there have been significant recent changes in this area with more to come. Aircrew training is the responsibility of the Naval Training Commander to whom, amongst others, I am responsible.

THE FAA OPERATING ENVIRONMENT

The maritime operating environment is marked by the following key features:

- **Multi-threat Environment.** The maritime battle is fought in three dimensions, with the aircraft or its operating platform subject to air, surface and sub-surface threats. The greatest dangers to maritime helicopters come from shipborne surface-to-air missiles.

- **Multi-mission Capability.** The operations of the principle RAN helicopter, the Sikorsky S-70B-2 Seahawk, epitomise the expected multi-role characteristics. The aircraft’s primary roles are anti-surface and anti-submarine, while it has a significant number of secondary roles including boardings, SAR, MEDEVAC, winch transfers and vertical replenishment operations.

- **Single Pilot Operation Requiring Multi-skilling.** Unlike the USN, which operates the Seahawk and one of the New Intermediate Helicopter (NIH) contenders in a two pilot configuration, the RAN modus operandi is for single pilot operation, with a Tactical Coordinator (TACCO) fulfilling copilot duties, and the aircraft operated in an autonomous mode, rather than with shipborne data processing and tactical employment. As such there is a significantly increased workload on the crew which is resolved through a significant degree of multi-skilling.

- **Technological Sophistication.** The Seahawk is indicative of the sophistication of aircraft in, or about to enter, the inventory. This aircraft employs glass cockpit technology and will be fitted with the latest FLIR and ESM in addition to its already advanced radar, MAD and passive and active acoustics.
While the Fleet Air Arm was evolving as a fleet of helicopters embarked in ones and twos in destroyer size or smaller vessels, the methods of training developed little from the days of the aircraft carrier, aligned to fixed-wing operations.

**HISTORICAL PERSPECTIVE OF FLEET AIR ARM TRAINING**

**Pilots**

The RAN has traditionally trained its pilots to the same syllabus as the RAAF, with pilots currently completing the course at RAAF Pearce on the PC9. Following this, they undergo rotary wing conversion on the AS350BA at the Australian Defence Force Helicopter School in Canberra. From here, pilots proceed to squadrons for Operational Flying Training (OFT), ie their conversion onto an operational Naval aircraft, before joining a ship’s Flight.

**Observers**

For observers, while they train with RAAF navigator students at RAAF East Sale, they complete a slightly different syllabus which has seen a number of changes over the last 20 years. From the School of Air Navigation they proceeded to NAS Nowra for Operational Flying Training with the appropriate squadron, having had no exposure to helicopter operations beforehand.

**NAVAL AVIATION IMPERATIVES**

One of the catalysts of changes in the training system is the expansion of Naval Aviation associated with the introduction of the New Intermediate Helicopter (NIH). The short listed contenders are the Westland Super Lynx and the Kaman SH-2G Super Seasprite. We expect that the NIH will enter service in the year 2000 with the following increases in overall numbers:

- **Expansion in Aircraft Numbers.** In spite of the retirement of some aircraft types, the overall number will rise from 32 to around 50 (the end figures quoted here are purely indicative).

- **Increase in Embarked Flights / Detachments.** To meet the requirement for the new ANZAC frigates and possibly the Offshore Patrol Combatant, the numbers of embarked flights and detachments will increase from eight to 23.

- **Increase in ‘Active Aviation’ Personnel.** To meet these increases the number of personnel will have to rise accordingly, and the numbers of personnel in active aviation billets will rise as indicated:
  
  - Pilots from 54 to 79.
  
  - Observers/aircrewmens from 68 to 97.
WHY CHANGE? - PILOTS

We have had to question the suitability of the traditional training pipeline to best meet the RAN's needs, and the Naval Training Commander initiated a complete review of all Naval aircrew training in 1995. This revealed that some major changes should be made to the content and execution of Naval aircrew training to reflect the present and future requirements of Naval Aviation.

Suitability and Relevance of Basic Pilot Training. Given the RAAF requirements, the present course at 2FTS is focused on the production of fixed-wing pilots, and fast jet pilots in particular, with some training conducted in areas not relevant for future Naval aviators. It was, therefore, not surprising that the review found that the course was not entirely suited to the training of Naval helicopter pilots.

Limited Course Access. Limited access to course positions is a significant impediment to the RAN resolving its current aircrew shortages, and its need for expansion to meet the requirements of the NIH.

Cost-Effectiveness. In the era of 'more bang for the buck', this has also translated into 'more training for the buck'. As such, it is impossible to ignore the cost savings being offered by training agencies other than the traditional RAAF training.

Scope of Change - Pilots

- **Similarity to Army Needs.** Army flying training arrangements were examined, the more so given the commonality of Navy and Army requirements, ie both Services are training aviators to fly large, sophisticated helicopters in complex operational scenarios.

- **Reduced Syllabus.** A reduced syllabus for initial pilot training (which reduced the course by approximately one third) has been approved at Navy level; however, it has subsequently been decided that the Navy's requirement will be developed in a tri-Service context.

- **Acceptance of Concept of Commercial Delivery.** The concept of the commercial delivery of pilot training has been accepted. This is not new ground for the Defence Forces, with a screening program for military pilot candidates currently being conducted by a civilian organisation at Tamworth. Other overseas precedents exist for substantial civilian training of Defence aircrew.

- **Lead-In Flying Training (LFT).** Recent experiences by the Seahawk squadron indicated that there was an up to a 20 per cent increase in training required during OFT for a novice pilot from ADFHS, over a pilot previously qualified on another type. In order to address this and bridge the skills and experience gap, the concept of helicopter Lead-In Flying Training has been developed. While still in the formative stage, indications are that the course will be conducted at NAS Nowra on the AS350BA. The course will ensure training in:
- embarked operations, ie deck landings, winch transfers and vertical replenishment;
- low level night and IFR operations;
- basic tactical operations at sea; and
- cockpit resource management training in operating with an observer as front seat crew.

The method of providing the resources required to conduct the Lead-In Flying Training is also under consideration.

**WHY CHANGE? - OBSERVERS**

Suitability and Relevance of Basic Observer Training. In much the same way as pilot training, the observer course was determined to be insufficiently focused for current RAN requirements. It was determined that the course should be less fixed-wing oriented, and incorporate common training in helicopter utility operations.

Limited Expansion Capability. There was also limited expansion afforded by the School of Air Navigation to meet the Navy's expanding throughput requirements to satisfy the manpower demands of the NIH.

Scope of Change - Observers

- **Two Part Observer Course.** The observer course will be split in two with a reduced syllabus at SAN and the second part of the course at NAS Nowra on the AS350BA helicopter.

- **Lead-In Flying Training for NIH TACCO.** Lead-In Flying Training is also under development for observers with no Seahawk TACCO experience before transitioning to the NIH. This will serve a similar function to the pilot's Lead-In Flying Training, and is particularly important considering that most observers will not have experienced front seat operations, although part of their responsibilities will be performing copilot duties.

**SIMULATION**

Navy is firmly of the view that simulators (including Part Task Trainers, Computer Based Training and sophisticated Flight Simulators) all play a vital role in the delivery of flying training. Most here will be aware of the advantages of simulators which include:

- reduced resource expenditure in airframe hours, fuel, and droppable air stores;
• immediate availability of assets for the training scenario, ie one can conjure up a submarine, several destroyers and aircraft, and a flotilla of fishing vessels at the drop of a hat; and

• the ability to practise a range of emergencies that would be unsafe to perform in the actual aircraft.

Recent analysis of the Seahawk simulator has indicated that real world tactical exercises are being conducted in the simulator for less than two per cent of the total cost that such exercises would normally incur.

Civil Accreditation for Flight Simulators

The RAN conducts in excess of 50 per cent of operational flying training in simulators and the fidelity of these systems is considered critical to the quality of the training. As such, the Navy has adopted a policy of civil accreditation for future flight simulators and is working towards the accreditation of those already in service.

Adoption of Part Task Trainer

As well as sophisticated flight simulators, the Navy is also operating or developing a range of part task simulators, including an acoustic trainer and a landing signals officer trainer.

Potential to Link Simulators

There is significant potential to further expand the training operations of simulators with their linking. This has been developed in the US Navy and subsequently been established as a program for the RAN. As such, we may eventually see a Seahawk simulator crew in Nowra operating with an FFG simulator crew in Sydney against a Collins Class submarine simulator crew in Western Australia. The possibilities are challenging in their immensity.

THE END PRODUCT - THE SEAHAWK

The effectiveness of Naval aircrew training is measured in the combat effectiveness of crews at sea. The operations of the Seahawk epitomise the demands we make on our personnel and on the training given them.

The aircraft operates as a three man crew - pilot, tactical coordinator and sensor operator. Its normal operating environment is low level, all weather day/night operations, while launching from and recovering to a small platform, with less than four metres clearance from rotor tip to hangar in the Seahawk/FFG combination, in conditions up to Sea State 5. The crew must operate an array of sensors including active and passive acoustics, radar, MAD, ESM and FLIR; as well as being prepared to carry out utility helicopter operations. Its primary missions are anti-submarine and anti-surface warfare; but there are a host of secondary missions.
Naval aviation training is designed to enable highly skilled personnel to apply training and experience in effective maritime operations. The bottom line is 'Delivering ordnance ... to people who didn’t order it!' 

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DISCUSSION

*Group Captain Connolly (RAAF):* I have question relating to the career of a Navy aviator. You mentioned the lack of aviation supervision for aviators at sea. What are the career opportunities for aviators in the RAN?

*Captain Eames (RAN):* Basically it tends to be a short term career - in about the 12 year bracket. Naval aviators tend to concentrate and focus on a career up to flight commander or 'two and a half' level (ie LCDR). Beyond that, the opportunities are fairly limited unless they move out of the aviation sphere, and branch out into other Navy areas, such as seaman officers. Clearly, there is not much opportunity for people to stay flying in the Navy beyond 'two and a half' rank.

*Group Captain Connolly (RAAF):* Can they progress to the Air Force?

*Captain Eames (RAN):* Yes they do in some cases, but things are critical at the moment.

*Group Captain Clarke (RAAF):* What are the savings in reducing fixed-wing training?

*Captain Eames (RAN):* The savings are obvious, but the pipeline is still two and a half years. However, we get a better pass rate and more in the pipeline.

*Captain Craig (RAN):* I'd like to make a few comments on failure rates. Prior to flight screening, the failure rates were pretty horrific, up to 66 per cent. Post flight screening, we expect a greatly reduced failure rate. With the new system, the pass rate is up to about 80 per cent, with no failures at the ADF Helicopter School and we do not expect any failures on OFT in future.

*Colonel Chua (RSAF):* What is the amount of fixed-wing flying in the RAN?

*Captain Eames (RAN):* Only two HS748 EW trainers; the rest has been helicopters for the last ten years.
AUSTRALIAN ARMY AVIATION TRAINING

Presented by Colonel Robert Walford, AFC
Director of Aviation - Army
Australian Army

INTRODUCTION

The expansion of the Army Aviation Corps, which accompanied the introduction into service of the Black Hawk helicopter, continues to place pressure on the Corps' training system. While an increase of 100 per cent in the training output has been achieved and additional courses and the loadmaster trade have been introduced, surge capacity and flexibility have been prejudiced. These pressures have impacted on the standardisation and operational culture of the Corps, and recent high resignation rates and the loss of corporate knowledge are exacerbating factors.

As a result of the training pressures, Army Aviation training is currently subject to a comprehensive review, both internally and by external consultants. The factors precipitating this review include:

- high pilot resignation rates, which have resulted in higher training liabilities;
- an inability to increase the training rate readily by the required amount;
- concern at an undesirable drift in the standardisation culture; and
- a requirement to be pro-active in seeking efficiencies driven by the prospect of budgetary pressures.

This presentation provides an overview of current training development issues and desired training outcomes. The current training system is described, as is the current review of the continuum of pilot training. Current and planned use of simulation and the nexus between operational airworthiness and training is discussed, and a brief discussion of issues associated with flying course pass rates is also included.

The aim of the presentation is to describe current areas of development in Army Aviation Training.

ORGANISATION FOR TRAINING

Command and Control. A key characteristic of the organisation for Army Aviation training is the emphasis placed on separating individual training from the operational units by centralising operational flying training wherever possible. Another issue is the potential efficiency that might be gained through the rationalisation of the training conducted by the Australian Defence Force Helicopter School (ADFHS) and the School of Army Aviation,
with the proposed amalgamation of the two Schools in about FY 1999/2000. Figure 1 indicates the links between DAVN-A, as the training adviser, and the Schools and operational users.

**ARMY AVIATION TRAINING**

![Diagram of Army Aviation Training System](image)

**Figure 1 - Organisation for Training**

DAVN-A’s responsibilities for training include:

- approval of the training objectives and examinations,
- determination of the training liability, and
- management of external validation.

**Training System.** Army Aviation training is designed in accordance with the Army Training System (ATS). The ATS is comprised of the following phases, which are subject to continuous review:

- Analysis Phase
- Design Phase
- Develop phase
- Conduct Phase
- Validation Phase
SEQUENCE OF TRAINING

Trainee Sources. Trainees are sourced through four points of entry as follows:

- Graduates of the Royal Military College (RMC) who:
  - are graduates of the Australian Defence Force Academy (ADFA), or
  - are RMC Aviation Cadetship scheme graduates (these cadets are tested before entry to RMC and are guaranteed allotment to Aviation on graduation).

- Specialist Service Officers (SSO) who are commissioned for increments of six and then five year periods (SSO are specialist pilots and are unlikely to command).

- Non-Aviation Corps officers who train as pilots with the intention of returning to their parent Corps after three years of flying experience.

- Military pilots from other Australian or foreign Services.

Selection. RAAF medical and psychological standards are applied to candidates. Selection procedures include an appearance before a selection board and, subject to funding, flight screening will be introduced.

Basic Flying Training (BFT). Trainees undergo BFT at the British Aerospace Flight Training Academy (BAFTA) at Tamworth, New South Wales. The BFT course comprises some 90 hours on CT4 and Tobago aircraft and includes basic, navigation, night, formation and instrument flying phases. The course is aimed at preparing trainees for basic helicopter training and is therefore not aimed at gaining qualifications in a particular aircraft. Use is made of the Academy’s part task trainers for procedural and instrument training. The Tamworth contract is managed by the RAAF.

Developmental Flying Training (DFT). Trainees undergo DFT at the Australian Defence Force Helicopter School in Canberra. The DFT course comprises about 120 hours on Squirrel helicopters and the course is structured in a conventional manner. The course is aimed at preparing trainees for Operational Flying Training but a first pilot qualification is granted and the trainees are eligible for a commercial helicopter licence. The ADFHS also conducts training for Navy and foreign students, in addition to QFI and basic loadmaster courses.

Operational Flying Training (OFT). OFT is conducted at the School of Army Aviation at Oakey in Queensland on either Kiowa, Iroquois or Black Hawk aircraft. This training graduates an operational pilot who is qualified as an aircraft captain for benign mission environments and who is subject to on-the-job (OJT) Mission Training requirements. The Aviation School also conducts operational aircraft transition, conversion and refresher courses, and aircrewman, loadmaster, observer and QFI standardisation training. The School is also responsible for initial entry courses for soldiers and career courses for all ranks.
Regulation of Training. Under the CGS/CAS agreement on Army Aviation, the RAAF is technically responsible for BFT and the Army is responsible for the remaining training. The main document from which training requirements are derived is the Statement of Operating Intent for each aircraft. These requirements are expanded in the Employment Specification for each aircrew qualification. The Employment Specification provides, or impacts on, the:

- **job specification** which describes the essential characteristics of the job, including the most difficult environments and conditions under which tasks are conducted;

- **training specification** which lists the tasks for training derived from an analysis of the job and which form the basis of the flying course;

- **trainee specification** which is a statement of the characteristics and prior training required of a trainee presenting for a particular course;

- **Training Management Plan (TMP)** which provides a detailed description of the training objectives, examinations, syllabus, curriculum and management requirements of the course; and

- **technical documentation, doctrine and training notes**, such as standardisation guides and mass briefs, which provide the detailed teaching points and course subject information.

Review. Training outcomes are subject to continuous review generated by external validation and audits, incident trends, the requirements of new equipment and OH&S issues. Providing the staff resources required to manage this review process is a challenge.

DEVELOPMENTS

Development Areas. The Army Aviation training system is subject to development in the following areas:

- review of the pilot training continuum,

- use of simulation and modern training techniques,

- the nexus between operational airworthiness and training,

- attempts to improve pass rates, and

- cooperative programs.

The Continuum of Training Review. The Continuum Review was generated by concerns about aspects of the current system which comprises three separate courses in three locations conducted over a total period of about 18 months (when administrative delay is taken into account).
Review Drivers. The main concerns which are driving the Review are the inadequate surge capacity and flexibility of the current system. Concern that the training continuum could be made more cost-effective through the incorporation of the optimum mix of modern techniques and training aids is also a major factor.

Review Timings. It is planned that new Training Management Plans will be produced by the end of 1997 with the resulting training being implemented over the subsequent 12 months. Final implementation of the review recommendations will be subject to the availability of the funds required to invest in modern simulation equipment and techniques.

Key Success Criteria. The key to the success of the Review will be the adequacy of the contractor’s cost benefit analysis and the extent to which the contractor has access to world best practice in aviation training. The capacity to report on these issues was fundamental to the selection of the successful tenderer.

USE OF SIMULATION

Current Simulation. While some maintenance simulators are used in current training, flight simulation usage is limited to overseas simulators in support of Black Hawk and Chinook courses. Use of the US Army’s Chinook simulators is, for example, an essential component of the initial Chinook training support plan. Use of Black Hawk simulation was, until 1996, limited to visits by 5 Avn Regt to Hawaii. The need to expand Black Hawk training this year without increasing rate of effort has resulted in the very successful use of US Army UH60 simulators in initial Black Hawk qualification training.

Near Term Simulation Developments. Projects are in place to acquire a Black Hawk Full Flight and Mission Simulator to be in service at Oakey by December 1998. A Black Hawk maintenance simulator to be developed to support RAEME Aircraft Maintenance School training is planned to be introduced over a similar time frame.

Future Simulation. Future projects are planned to provide appropriate levels of simulation to support Squirrel training at the ADFHS and aircraft provided under Air 87, and related projects will be fully supported by simulation. It is hoped that lower fidelity simulators may also be provided in the interim to support Kiowa and UH1H training. Future Basic Flying Training contracts should also formally specify the use of simulation. A major issue yet to be resolved by all users is how the optimum level of simulation and associated technologies is defined.

OPERATIONAL AIRWORTHINESS

Changes in Management Philosophy. Up until 1996, DAVN-A’s role could broadly be described in terms of technical control which is the provision of professional guidance and direction in technical matters. The revision of RAAF airworthiness guidance together with the implications of OH&S responsibilities is driving a more robust approach to technical management based on an operational airworthiness management (OAM) system similar to the system of technical airworthiness management.
Operational Airworthiness and Training. Since the aim of operational airworthiness management is to ensure that approved roles and tasks are conducted by competent personnel using appropriate equipment, it is evident that quality training is a prerequisite for effective OAM. This also implies that more emphasis must be placed on ensuring that mission proficiency is supported by each phase of training, including OJT. It can be argued that senior training managers must now retain a greater degree of visibility over the extent to which the training system, including OJT, produces mission ready aircrew. An effective external review and audit program contributes to this visibility.

Quality Management of Training. Greater emphasis on the embedding of quality management philosophies in the training system is required since it is clear that operational airworthiness considerations demand that training is supported by:

- appropriate documentation and procedures;

- visibility of, and control over, change; and

- a robust culture of authorisation and supervision.

PASS RATES

Impact of Selection Procedures. Attempts to improve pass rates appear to have been directed mainly towards improving selection procedures. The success of the flight grading/screening system has been notable and the traditional tests, while always subject to review, appear to be quite adequate except that there is concern that the procedures might benefit from approaches which more specifically focus on the candidates suitability for helicopter training; more research in this area appears to be required.

Impact of Training Effectiveness. Although often discussed, too little effort appears to have been expended on improving training methodologies. While the need to develop a core of highly proficient QFIs is recognised, current policies and training systems do little to see this need fulfilled. QFIs rarely possess the optimum level of experience, due to the impact of postings, career development and resignations, and the QFI training system is probably not as modern as it could be. Further, the lack of optimum levels of simulation, part task training, self-paced learning and recognition of prior competence in the training system is notable, although attempts are being made to redress these deficiencies. A somewhat controversial view on QFIs is that they are part of the problem; they are rarely innovative, are risk averse and too quickly revert to ‘tried and proven methods’, thus prejudicing the implementation of new philosophies.

Management of Marginal Trainees. The management of marginal trainees is a major challenge for any flying training institution and is an issue which has been the subject of some research but little change. The corporate view appears to be that assessment procedures which have generally been in place for the past 80 or so years of military flying are as good as they can practically be. Wrong decisions relating to marginal students may impact on flying safety and this militates against adopting radical approaches. It can, however, be argued that greater research in this area might reveal management techniques and remedial training processes which improve the pass rate of marginal trainees without
detrimentally affecting flying safety or operational effectiveness. It is interesting to note, for example, that the US Army is more prepared to retrain students than is the ADF and yet the US Army accident statistics and experience in combat operations suggests that they have a very adequate system.

REGIONAL COOPERATION

The main areas of potential regional cooperation in training are as follows:

- **Simulation.** Joint use of simulators might be feasible where common equipment is used. Several regional nations use CH47Ds and UH60 variants and there is potential for cost sharing arrangements to be put in place which might see simulators constructed and managed by civilian companies on behalf of several military users. Further, developments in simulator technology are likely to result in the widespread use of multi-purpose reconfigurable simulators which might overcome the limitations imposed by the range of aircraft used in the region, with the result that cooperative arrangements might be more attractive in the future.

- **Joint Training.** Pilots of foreign military forces are already trained in Army schools and it is likely that the number of foreign trainees will increase in the future. Resource limitations suggest that, without full cost recovery and the use of contract personnel, the scope of foreign training will be limited for some time.

- **Joint Projects.** Participation in joint projects appears to offer considerable potential for cooperation. Many such projects could be identified from regional air power workshops such as this. Research projects, in particular, appear to offer considerable scope for cooperation.

CONCLUSION

Australian Army Aviation training will be the subject of considerable change in the future. The need to improve the current training system and to prepare for the possibly profound effects of current and proposed equipment acquisitions make change an imperative.

Data to support changes which appear to be intuitively necessary are not always readily available. Regional cooperation in aviation training research might prove useful in this respect.

There appear to be several potential barriers to positive change in training. One potential barrier is the conservative approach exhibited by the military training system. Another barrier is a lack of strategic planning combined with the limited availability of the investment funding required to implement improved and lower life-cycle-cost training systems.

Cooperative approaches need to be taken to the task of redressing training system deficiencies.
DISCUSSION

Group Captain Connolly (RAAF): I’d like to make an observation on the difficulty of conducting research on Australian aviation. It takes many years of research to gain enough information on which to base change. But we tend to change things before we have a research base. People come in with new, innovative ideas and make changes. Those changes then themselves self-generate a series of further changes. We need to exercise caution. There are research difficulties because of the small numbers that we have and the amount of continuous change tends to produce ‘knee jerk’ reactions.

Group Captain Kindler (RAAF): I think we have changed our ways.

Colonel Walford (Army): I do not accept that we have made any fundamental changes in instruction.

Captain Craig (RAN): Navy did some work on pilot training requirements last year and concluded that, from a Navy viewpoint, much of the work being done at 2FTS needed to change to meet the demands of the 21st century. I’m not sure that any significant changes have been made as yet. The problem with Pearce is that a ‘hack’ mentality is alive there and this affects the student body. Therefore, nothing much has changed and the methodology is old. The thing that is probably needed is a quantum leap in pilot training.

Group Captain Shepherd (RAAF): It seems to me that our main problem is that we are fragmenting the Air Force. We are ‘re-inventing’ one wheel into three smaller wheels. Navy and Army air elements are increasing in size and now finding the same problems that Air Force has already addressed in the past. The Navy and Army problems are mainly due to their increase in size.

Colonel Walford (Army): The problem appears to be that we are all out of synchronisation. Army is doing its review on pilot training requirements while Navy is going off in another direction on their review. There is a need for coordination but it is essential that the training curriculums of each Service reflect the results of training needs analyses and not a perceived need to have common training for its own sake.

Group Captain Shepherd (RAAF): The basic problem appears to be that we are trying to meet a single basic flying training requirement in three ways - each Service appears to be trying to do it alone.

Group Captain Connolly (RAAF): Statistics show that 2FTS is now training people, rather than ‘scrubbing’ them as it probably did in the past. There is no need for fundamental change - we have a system which is working and there is no need to revolutionise our pilot training methods.

Captain Craig (RAN): Navy would agree with that observation. There are too many changes being suggested.
Group Captain Connolly (RAAF): Yes, there is too much change and not enough check on performance.

Colonel Walford (Army): I agree.
NO 41 WING AND THE AIR TRAINING PROCESS

Presented by Wing Commander Tim Owen
Air Defence Ground Environment Operations
Royal Australian Air Force

INTRODUCTION

In this presentation I will cover the following topics:

- a profile of No 41 Wing (41WG);
- the current situation regarding Air Defence Ground Environment (ADGE) training and where we currently are in 41WG;
- training issues, both Basic and Postgraduate training; and
- the options available to 41WG in the short and long-term, and the implications that this will have on regional cooperative training issues.

NO 41 WING

The current strength (Constrained Establishment (CE)) of 41WG is 507 personnel, and assets are located in several locations throughout Australia, as shown in Figure 1.

Figure 1 - 41WG Assets
Mission. The mission of 41WG is:

to conduct effective airspace surveillance, airspace control activities and air defence operations, and to develop and maintain Australia’s Air Defence Command and Control infrastructure.

41WG OPERATIONAL TRAINING TASKS

41WG provides the following ADGE operational training:

- Tactical Level Command and Control (HQ41WG).
- Basic and Postgraduate Operator (Air Defence Controller (ADCON) and Air Surveillance Operator (ASOP)) and Technician Training.
- Joint Operations Planning and Battle Management Training.
- Civil/Military Airspace Management Training.

All basic training courses and most postgraduate training are conducted at the Australian Defence Force Air Defence Systems Training Centre (AADSTC) at No 3 Control and Reporting Unit (3CRU) located at RAAF Williamtown.

I would point out that the AADSTC comes under Headquarters Air Command (HQAC) and not Headquarters Training Command (HQTC). As a result, funding for AADSTC activities comes from the operational vote and there is no dedicated HQTC funding for the support of courses. Also there is no training system hierarchy as in dedicated training schools, and much of the support from the operational units (such as 3CRU and the flying squadrons at Williamtown) is provided after operational requirements have been met. In addition, education assistance, including help with course structures and defining Course Terminal Objectives (CTOs) and graduation requirements (GRs), can at times be difficult to obtain.

Having the AADSTC located at RAAF Williamtown, the home of the Tactical Fighter Group (TFG), offers significant advantages due to the proximity of operational fighter squadrons for support of ADGE training courses, and also allows the AADSTC to provide support to these TFG elements. However, there are some problems due to inadequate and outdated facilities. In addition, training requirements often impinge on the operational function of 3CRU.

The introduction of several new projects has increased the ADGE training requirements significantly. The integration of ATC officers into the Air Defence category in January 1997, and the subsequent cross training requirements, will further stretch our training resources.
ADGE PROJECTS AND WORKFORCE

No 41 Wing is one of the few organisations in the ADF that is expanding, with some $A4.2 billion being spent on new hardware over the next few years. The significant projects are shown in the following table (Table 1):

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air 5333</td>
<td>Control Displays and Internal Communications</td>
</tr>
<tr>
<td>Air 5397</td>
<td>Air-Ground-Air Communications</td>
</tr>
<tr>
<td>Air 5375</td>
<td>Replacement of TPS-43 Radars</td>
</tr>
<tr>
<td>Air 5186</td>
<td>ATC Radars</td>
</tr>
<tr>
<td>JP 2030</td>
<td>Command and Control SADOC and NADOC</td>
</tr>
<tr>
<td>Air 5077</td>
<td>Airborne Early Warning and Control</td>
</tr>
<tr>
<td>JP 2025</td>
<td>Jindalee Over-the-Horizon Radar Network</td>
</tr>
</tbody>
</table>

Table 1 - ADGE Projects

Figure 2 shows the lead time training requirements for project implementation and demonstrates that if all systems/projects proceed on time, the ADGE is in for major changes to current operations by the end of 1999 to early 2000. Of note are the requirements to man projects both before and during their implementation. In addition, the existing ADGE system has extant personnel manning requirements.

Figure 2 - Lead Time Training Requirements

With the implementation of projects comes an additional requirement to increase the overall ADGE workforce. JORN will require an additional 200 personnel and AEW&C will require a further 50 ADCONs (plus an increase in aircrew and maintenance personnel to man and operate the aircraft).
Figure 3 - ADS Growth Rates

The graph at Figure 3 shows the overall increase in the Air Defence System (ADS) from the current strength of about 500 to roughly 900 by about 2004. This figure does not include the additional increase due to the amalgamation of ATC officers (CE 296 with about 214 manned) which will result in 41WG growing to around 1,100 personnel; well over double the present (1996) manning.

Figure 4 - Air Defence Personnel Growth Rates vs Training Rates

Obviously, the growth in personnel numbers impacts significantly on training resources. Just looking at Air Defence personnel alone, the graph at Figure 4 shows the CE increases for ASOP and ADCON personnel over the next ten years, which includes the JORN and AEW&C requirements. Naturally, training needs to match and at times exceed these growth levels. As a result, separation rates need to be reduced or maintained at standard levels. This is difficult given the frustration many personnel have with current equipment.
Training rates are also shown on the graph at Figure 4. This year (1996) we have doubled the number of basic courses. The training rate for ADCONs has increased from 16 to 30 per year, and ASOPs from 20 to 40. Unfortunately, even with this increased training rate, equipment limitations with the current system mean that we would not anticipate reaching CE levels for ADCONs until 2004, and not at all for ASOPs, given that the separation rate increases to a point where training cannot match wastage.

**41WG RESOURCE ISSUES**

One of the main reasons for not attaining the required training rates is the imbalance between the training load and the resources available. 41WG conducts 71 training courses per year to train about 30 ADCONs, 40 ASOPs, 161 postgraduates (not including ATC cross training) and 95 technicians. However, the flying hours currently available to support these training requirements are limited to 215 hours Learjet, 80 hours Macchi and 80 hours F/A-18. These allocations are insufficient to meet the training demands.

It is unlikely that any increase in aircraft hours would be available, even if we could further increase the ADGE training rates. Therefore, the AADSTC is heavily reliant on simulation to provide the required level of training so as not to waste valuable and limited aircraft resources. The availability and use of simulation is essential, therefore, to fill the resources gap.

Unfortunately, the current simulator at AADSTC is antiquated and not user friendly for the ASOPs who are trained to act as pilots for the ADCONs. The ASOPs who act as simulator pilots have to undergo an intensive four week course where they learn all the appropriate tactics and phraseology expected of a fighter pilot.

Approval has recently been given for the purchase of a computer aided trainer that will allow a much improved simulation capability. This will also mean that we can reach CE levels a couple of years earlier for ADCONs and actually reach ASOP CE levels somewhere around 2003-2004. The new simulator also will allow us to provide a much greater and improved simulation capability for the majority of postgraduate courses, as well as freeing up the Operations Rooms for on-the-job training (OJT) consolidation.

**41WG TRAINING STRATEGY**

This year, for the first time, 41WG announced its Training Strategy and career pathing for both ADCONs and ASOPs. In the past, much of Air Defence training was left to OJT with the hope that personnel would just pick it up as they went along – not a very satisfactory method of conducting business, especially when the business is the defence of Australia. The Training Strategy was developed to provide Air Defence personnel with a clear picture of which courses are required at relevant stages of their careers and that are critical to the overall development of the ADGE as an operationally capable and well functioning organisation.
The air training processes and career paths for ADCONs and ASOPs are illustrated in Figures 5 and 6 respectively.

**Figure 5 - Air Training Process for ADCONs**

The Training Strategy also provides the AADSTC with a clear indication of the direction of development for courses. Many of the courses will be run for the first time over the next 12 to 18 months, so there is still the likelihood of further course development as the Strategy evolves.

Included in the Training Strategy are the courses required for postings to units, such as No 114 Mobile Control and Reporting Unit (114MCRU), which uses a different computer system and therefore radar presentation to the systems at No 2 Control and Reporting Unit (2CRU) and No 3 Control and Reporting Unit (3CRU). No 1 Radar Surveillance Unit (1RSU), being an HF radar, is different again.

**Figure 6 - Air Training Process for ASOPs**
 Needless to say, as other projects come on line, the Training Strategy will continue to evolve to meet the changing requirements of the ADGE.

**TECHNICAL TRAINING**

New radars, new communications systems and new radar display systems all mean a significant increase in technical training requirements. The very nature of the job will change with the new systems, which will require different types of technical expertise as some maintenance will only be local level, with deeper level maintenance occurring away from the system site. It will not be sufficient to wait for the new systems to arrive to determine technical maintenance requirements. We must anticipate and plan how we are to use our technical support in the most efficient and effective method.

The options available to the ADGE for technical training in the future include:

- the short term option of increased and improved use of simulation to assist meeting the required training rates;
- the possibility of commercialised maintenance training; and
- interoperability through exercises, such as PITCH BLACK and TANDEM THRUST.

**REGIONAL PERSPECTIVE**

What does all I have said mean from a regional perspective? Firstly, you need to be aware that due to the increased RAAF training requirements, we will have only a limited ability to provide basic or postgraduate air defence training for personnel from regional countries, at least in the short term. However, we could possibly provide some development support in-country, if funds were made available, and we could assist with information exchange and development of air defence training course syllabi.

From an exercise viewpoint, we plan to:

- broaden the scope of future exercises,
- increase GCI deployments in combined exercises, and
- place increased emphasis on tactical battle management.

Lastly, we will of course continue to participate in conferences, seminars and discussions with regional countries on all aspects of air defence and air defence training.

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55
DISCUSSION

Kolonel Zakaria (RMAF): Do you train RAAF officers either with or using the same syllabus as civilian air traffic controllers?

Wing Commander Owen (RAAF): RAAF ATC officer training is done separately by the RAAF, but the syllabus is closely linked to the civilian ATC course.

Group Captain Connolly (RAAF): The RAAF will start combined training with civilian ATC officers next year. RAAF ATC officers have now got ICAO accreditation, and the air defenders will get theirs next year.

Colonel Walford (Army): Regarding part task trainers, what cost benefits do you expect from their use?

Wing Commander Owen (RAAF): We believe that the use of part task trainers and computer aided instruction (CAI) will offer significant cost benefits, but no analysis has been done on the subject as yet.

Group Captain Harvey (RAAF): With the introduction into service of AEW&C aircraft, what changes in training courses etc are envisaged?

Wing Commander Owen (RAAF): The training requirements for AEW&C have yet to be determined. For example, we are still not sure whether navigators will be carried on AEW&C aircraft or just air defence controllers - decisions on crewing of the aircraft have yet to be made. Regardless of the final outcome, however, we will develop and conduct formal training courses to meet the AEW&C requirement. We expect that there will be a similar progression to AEW&C to that used by the USAF.

Colonel Eslao (PAF): How do you do your maintenance training for air defence technicians?

Wing Commander Owen (RAAF): Our maintenance people are trained as part of our standard ground technical maintenance training.
NO 81 WING AND THE AIR TRAINING PROCESS

Presented by Group Captain John Kindler, AFC
Officer Commanding No 81 Wing
Royal Australian Air Force

INTRODUCTION

In this presentation I will cover the following topics:

• a profile of No 81 Wing (81WG);
• air operations training tasks;
• the 81WG training process; and
• 81WG training from a regional perspective.

NO 81 WING

No 81 Wing is the RAAF’s Fighter Wing and comprises:

• 1004 men and women (constrained establishment);
• six flying squadrons in three States of Australia;
• two F/A-18 Hornet Operational Flight Trainers;
• 69 F/A-18 Hornet aircraft, plus a further two at Aircraft Research and Development Unit (ARDU);
• 25 Macchi aircraft, our current lead-in fighter;
• three PC9/A aircraft for Forward Air Control (FAC) training; and
• an allocation of about 19,000 flying hours per year, which equates to about 20 per cent of the total RAAF flying hours.

The locations of 81WG units are shown at Figure 1.
Mission. The mission of 81WG is:

to prepare for and conduct effective airspace control, counter air, strike and combat air support operations.

81WG AIR OPERATIONS TRAINING

81WG conducts the following air operations training:

- Tactical Level Command and Control (HQ81WG);
- Lead-In Fighter (LIF) training;
- Forward Air Control (FAC) and Air Contact Officer (ACO) training; and
- Hornet multi-role fighter training.

Lead-In Fighter Training

81WG provides cost-effective basic fighter training using Macchi MB326H aircraft. Pilot conversion to the Macchi aircraft is conducted at No 25 Squadron at Pearce. No 76 Squadron conducts the Lead-In Fighter Course at Williamtown, which covers fighter tactics and systems. Pilots then receive post-LIF consolidation at 25SQN and 76SQN. All pilots posted to 81WG undergo the LIF Course. Pilots and navigators destined for 82WG also receive this training. LIF training significantly improves the pass rate and reduces the duration of the Operational Conversion Course.
FAC/ACO Training

81WG conducts FAC and ACO training using modified PC9/A aircraft; however, it must be recognised that the PC9/A is a trainer aircraft only and is not an operational FAC aircraft. The training provides ADF members with basic qualifications for offensive air operations. We do not have a dedicated operational FAC platform in the ADF. In a contingency, we could make use of rotary wing assets and the RAAF can use the Hornet in the fast FAC role. FAC and ACO trained personnel are employed in unit training and exercises.

Hornet Air Training

No 2 Operational Conversion Unit (2OCU) conducts the following F/A-18 Hornet Courses:

- Operational Conversion (OPCONV);
- Refresher Training; and
- Fighter Combat Instructor (FCI).

2OCU training support systems include:

- an Operational Flight Trainer (OFT) for training in aircraft systems, EW and procedures;
- computer aided instruction (CAI) and part task trainers (PTT) for training in aircraft systems and tasks (radar and weapons);
- a Mission Planning System (MPS); and
- Air Weapons Ranges, such as Delamere, for weapons application training, EW and air combat manoeuvring and instrumentation (ACMI).

Nos 3, 75 and 77 Squadrons conduct operational training to meet the multi-role tasks of the F/A-18 Hornet aircraft. This training includes:

- squadron training against the categorisation scheme,
- training in both air-to-air and air-to-surface roles, and
- single Service, joint and combined training and exercises.

Postgraduate air training for 81WG pilots includes:

- B category fighter pilots to QFI, FCI and TP Courses;
- EW, Weapons, FAC and Joint Warfare Courses; and
- exchange programs with US and UK Air Forces.

81WG also provides support to other RAAF units and to Navy and Army training.
During FY 1996/97, 81WG will participate in the following exercises:

- six exercises in support of the Australian Army;
- six exercises in support of the RAN;
- sixteen combined exercises:
  - three with US forces (PITCH BLACK 96, TANDEM THRUST 97 and ACES NORTH 97);
  - two with the RNZAF (WILLOH); and
  - eleven regional engagement exercises (FPDA, Thailand and Indonesia); and
- six RAAF exercises (unit training).

81WG REGIONAL ACTIVITIES

From a regional perspective, 81WG participates in the following training activities:

- WILLOH;
- CHURINGA (Malaysia/Singapore);
- THAI BOOMERANG;
- ELANG AUSINDO;
- PITCH BLACK; and
- KANGAROO series.

Our involvement concentrates on tactical level operations, with the prime emphasis being on air-to-air roles, especially air defence. 81WG also participates in various regional seminars (eg IADS) and airmen-to-airmen discussions with regional air forces.

In the future, we are looking at broadening the scope of combined air training and exercises to cover other air-to-air roles, such as offensive counter air, and air-to-surface operations, such as maritime attack. In addition, we are looking at alternate deployments between the RAAF and regional air forces, seminars on the tactical employment of air power and exercises with a more multilateral focus.

***************
DISCUSSION

Colonel Chua (RSAF): How many FCIs are trained each year?

Group Captain Kindler (RAAF): We train six FCIs every 18 months. The RAAF FCI Course is tailored to the Hornet. So, if pilots from regional air forces were to be trained on our FCI Course, they would need to be Hornet pilots to be able to participate fully. The FCI Course has to be aircraft specific and is very much focused on the F/A-18.

Kolonel Zakaria (RMAF): How much night flying operations do your pilots do?

Group Captain Kindler (RAAF): For line pilots, about 30 per cent of their flying is night operations. We have looked at night vision goggles (NVG) and we have instructors and a syllabus ready to go; we just don’t have the NVGs as yet. The Hornet cockpit is pretty well set up for modern NVG operations. Some of our pilots have practised with NVGs while on exchange in the US. The latest types of NVGs now provide a greatly improved capability over the earlier ones and night visual low-level operations are quite possible, including defensive manoeuvres and acquisition of targets. The US AV8B Harriers and USN Hornets use the system, and the US Marines operate their F-18D with two crew on low-level operations with NVGs.

Colonel Walford (Army): What external review and audit process is there on your training program?

Group Captain Kindler (RAAF): CFS checks our instructors. All the rest are done by our internal organisation at 81WG.

Kolonel Wattimena (TNI-AU): On your Lead-In Fighter Course, do you have any problems with pilot conversion training for people who have not flown jets before?

Group Captain Kindler (RAAF): It is hard to make strong judgements, but some pilots who have only flown the PC9 do have significant problems converting to the Macchi. It is probably not the aircraft itself, just a problem converting to another aircraft type. However, it is a necessity in the Air Force that people must be able to adapt and convert from one aircraft type to another. We have changed the sequence of the Lead-In Fighter Course around so that pilots get the necessary jet experience. Initially, pilots were trained in air-to-air and then air-to-surface, but we now do air-to-surface first before doing the more difficult air-to-air. Its hard to say at this stage whether the change in sequence has had much effect as the sample is very small.

Group Captain Connolly (RAAF): You’re not suggesting that the higher pass rate at FTS is resulting in a higher failure rate at TFG are you?

Group Captain Kindler (RAAF): It could be. A ‘high flier’ has a better chance than someone who only just passed 2FTS.
NO 82 WING AND THE AIR TRAINING PROCESS

Presented by Group Captain Geoff Shepherd
Officer Commanding No 82 Wing
Royal Australian Air Force

INTRODUCTION

No 82 Wing (82WG), unlike some others, is a numerically small Wing, almost a boutique one, and our size is an advantage - in that it allows a clear focus on our tasks and makes for a close interaction between Wing and Squadron personnel - but also a hindrance, because we are structurally fragile and small variations often have a large impact.

This is a time of great change for the Strike Reconnaissance Group (SRG). We are introducing a digital upgrade of the R/F-111C. Further, the 15 F-111Gs which we recently acquired have been something of a mixed blessing. The major challenge is in the logistic and maintenance support area because these new aircraft are only about 40 per cent common with the F-111C and RF-111C. Similarly, their capabilities do not match our existing tactical doctrine. Before I address some particular training issues applicable to the strike reconnaissance force, I will give you a brief profile of 82WG.

NO 82 WING

The roles of the strike reconnaissance force are broadly:

- Land strike.
- Maritime strike.
- Army support.
- Air control.
- Air reconnaissance.

82WG is based at RAAF Amberley in southern Queensland and comprises the Headquarters and two flying squadrons as shown in Figure 1.

![Figure 1 - 82WG Organisation](image-url)
The ‘standard’ F-111 training sortie flown by 82WG crews is normally of about 2.0 to 2.5 hours duration and each sortie encompasses many of the roles and tactics employed by 82WG. This demonstrates the multi-role, or more correctly ‘multi-employment’, capability of the F-111.

**THE ‘STANDARD’ SORTIE (2.0-2.5 HRS)**

![Diagram of the 'standard' F-111 training sortie](image)

**Legend:**
- T/O: Take-off
- INTS: Intercepts
- LO TGT: Low-level Targets
- MED TGT: Medium-level Targets
- MARSTK: Maritime Strike
- IF: Instrument Flying
- CX: TF Checks
- TF: Terrain Following
- RAMP: Steep Climb (to minimise exposure)
- EVD: Evans Head Air Weapons Range
- GF: General Flying
- PAS: Precision Air Support (to Army)

**Figure 2 - The ‘Standard’ F-111 Training Sortie**

**82WG AIR OPERATIONS TRAINING**

When the RAAF first introduced the, analogue, F-111C into service in 1973 aircrew training was relatively simple. There was only one type and new crews completed conversion to type training in 6SQN before commencing operational duties with either 1SQN or 6SQN Operations Flight (OPSFLT). The RF-111C modification in the early 1980s added only a slight training complication. 6SQN OPSFLT became Reconnaissance Flight (RECONFLT) and all crews continued to be converted to type in the strike role only.

Selected, and experienced, crews were posted from 1SQN to 6SQN RECONFLT where they undertook role specific training. Very occasionally on a case-by-case basis, and only when preferred manning options were precluded, some aircrew went direct to RECONFLT from Conversion Course. In the mid 1980s the Pave Tack modification was accommodated in a training sense by undertaking a modular block of instruction at 1SQN after experience was gained in the traditional ‘ballistic’ bombing role. By the early 1990s, all Pave Tack training had been included as part of the Conversion Course as our operational doctrine shifted nearly completely to precision delivery. A Refresher Course was added in the mid 1980s to ease the training load attendant with putting second tourists through the Conversion Course again. This simple flow is no doubt replicated by the training processes of all here today, but the present and the future for 82WG are not so simple. Why? The
answer lies in the number of different F-111 variants we now operate. This number will certainly increase in the next five to ten years.

**Variants of F-111 Aircraft**

82WG now operates several different variants of the F-111 aircraft. In addition to the three different basic models (the F-111C, RF-111C and F-111G) there are also differing combinations of engine types fitted (103, 107 and 109 engines) and we are in the middle of a major avionics update program (AUP) to the R/F-111C. In addition, the F-111G has had a digital upgrade, but not to the level of that for AUP, and will soon be fitted with a digital flight control system (DFCS). The outcome of all this is that there can, in the near future, be up to 14 different variants of F-111 aircraft on the flight line at Amberley, all with differing characteristics, capabilities and performance and, more importantly, all with different crew training requirements. As I am sure you can appreciate, this situation makes the training task extremely difficult, as formal conversion and transition training is required before crews can operate some of the different variants of the aircraft. Table 1 illustrates the ultimate situation with which we will be faced on a daily basis.

<table>
<thead>
<tr>
<th>WHICH ONE TODAY?</th>
<th>PRE AUP</th>
<th>AUP</th>
<th>DFCS</th>
<th>103</th>
<th>107</th>
<th>109</th>
<th>EW+</th>
<th>G+</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-111C</td>
<td>YES</td>
<td>YES</td>
<td>-</td>
<td>YES</td>
<td>-</td>
<td>YES</td>
<td>EW+</td>
<td></td>
</tr>
<tr>
<td>RF-111C</td>
<td>YES</td>
<td>YES</td>
<td>-</td>
<td>YES</td>
<td>-</td>
<td>YES</td>
<td>EW+</td>
<td></td>
</tr>
<tr>
<td>F-111G</td>
<td>-</td>
<td>-</td>
<td>YES</td>
<td>-</td>
<td>YES</td>
<td>YES</td>
<td>G+</td>
<td></td>
</tr>
</tbody>
</table>

YES = possible, EW+ = EW upgrade possible, G+ = F-111G upgrade possible

**Table 1 - Variants of F-111 Aircraft**

Even after the AUP is finished and all F/RF-111Cs have been upgraded, we will still be faced with a significant coordination and training task to ensure that the aircraft variant and modification status matches the mission requirement and the individual crew's training status. The potential problems are obvious and what the final end state of aircraft modifications will be has yet to be determined. This is the subject of current deliberations in the higher Defence committee process and it will not be until around 2005 that the stable end state will be reached.

**CURRENT TRAINING FLOW**

The introduction into service of the digital AUP F-111C aircraft mid this year brought with it all the wonderful world of software. I'm sure all here can imagine what that encompasses and many of you will have gone through it, but to put it in context, the AUP upgrade is, broadly speaking, the largest military aircraft update ever undertaken on any aircraft by any Western nation. It goes twice as far, and then some, as the USAF F-111 Pacer Strike...
update and adds, for good measure, DFCS as well. A big job and a big move into a new world for 82WG. Unfortunately, the training package for the new aircraft had to be developed in-house, and largely on desktops, before we had our hands on the product. Slippages in the project negated the original decision to introduce the type into service through 1SQN, the operational squadron, and in July this year we commenced our first F-111 Conversion Course on the AUP variant, not for current analogue crews, but for new *ab initio* F-111 aircrew.

6SQN Training Flight (TRNGFLT) had only received the first AUP F-111C a month earlier, so you can see that this Conversion Course will be very developmental in nature. When these students graduate and get posted, in the main to 1SQN, that unit will be operating only the analogue pre-AUP F-111C and, as I shall explain soon, the RF-111C. Consequently they will need a 'digital-to-analogue-variant' conversion. This will have to be conducted in-house, without QFIs or INs and without a syllabus. 1SQN is not established for QFI or IN positions. There is, however, in the unit a wealth of digital experience from aircrew who have had USAF exchanges with the F-111D and F, and RAF exchanges on the TORNADO. I am confident that by careful management we can get over this short, but turbulent, period. This problem will sunset as more AUP F-111Cs are produced and sufficient are available for use by 1SQN; on current plans at the end of 1997 or early 1998.

Earlier this year 6SQN RECONFLT was disbanded and this function absorbed into 1SQN operations. This organisational restructure has not only allowed the formation of 6SQN OPSFLT with the F-111G, but also better operational integration of the reconnaissance and strike functions, as well as centralisation of all the remaining analogue aircraft within one unit. Reconnaissance duties are now undertaken by selected 1SQN crews and their role specific training is conducted in-house to an approved syllabus. This modular add-on is, I believe, the way of the future as we move to introduce new weapons such as GBU-24, ARM and AGM-142. The planning complexities of these weapons will, on a time basis alone, preclude their complete coverage in the Operational Conversion Course (OPCONVCSE). A general understanding will need to be achieved there, with full capability knowledge undertaken after reaching Category C (Operational) after six months at 1SQN or 6SQN OPSFLT. Planned enhancements such as stand-off imaging (SOI) and forthcoming EW upgrades may well benefit from such an approach.

The F-111G, as mentioned earlier, is both logistically and operationally different from the Pave Tack equipped F-111C. We have had to make tactical doctrine changes to fully use and employ the capability of this weapons system and we are still very much in the developmental stage of this process. We commenced F-111C operations by posting-in only experienced crews, as we once did with the RF-111C. Our small size does not make this viable for the steady state as our experienced crews are essential, in a supervisory sense, across all of the four Flights. We now post new crews direct from the OPCONVCSE, to the F-111G and so far this has been successful. F-111G transition training is conducted in-house and to an approved syllabus. The major difficulty to date has not been the role of the aircraft but the logistic robustness of this digital system, but one that is very much different to that of the AUP RF-111C.

There are studies and projects ready for approval which seek to optimise the F-111G and introduce a high level of commonality with the AUP variants. I believe that once we become fully comfortable with the digital world then crews will be able to change between the AUP R/F-111C and the F-111G on a daily basis. In any event the AUP delivery schedule will
soon mean that the odd variant out is the analogue R/F-111Cs and I can envisage 6SQN OPSFLT operating the last of these ‘classics’, with 1SQN having a mix of digital, C and G, types.

The impact of all this training turbulence is felt in many ways. The Category D (trained) to Category C (operational) time line, normally six months, is now very elastic and dependent on the variant transitions undertaken post OP CONVCSE. The drain on our scarce training resources is large and I have stated how we have had to make ‘work-arounds’ to accommodate this. There is an increased potential for failure as we ask more of the junior crews and there is currently a loss of flexibility in our operational employment of crews and aircraft as we ‘penny packet’ both. This last point, while topical, will ultimately turn-around to give us ultimate flexibility once we reach the steady, all digital state of just AUP R/F-111C and F-111G aircraft. Then we will have a better type commonality and crews able to be cross-trained across all types and roles. This will afford us the ability to package the strike force, and the role specialities of the variants, according to the task at hand.

Just a word on simulation. We have had no simulator at all for the best part of 1996. The analogue simulator was decommissioned earlier this year to make way for the AUP simulator. This will be in place early in 1997 and, although not fully G compatible, it will facilitate and enhance our training enormously. We will have full-time, civil, ex-military instructional staff with the simulator and, whilst we have yet to fully scope the benefits and savings that will accrue with the new simulator, the introduction of this system will be fundamental to our future conversion and operational training.

**OPERATIONAL READINESS**

On the operational side, crew progression from Category D (trained) to Category C (operational) and then to Category B and Category A is conducted in accordance with the Categorisation Scheme. This has been updated to reflect civil best practice, where applicable, and to include the role specialities of the F-111G. 82WG maintains operational readiness by a mix of Amberley based training and exercise participation. This latter involvement can be subdivided into the following broad defence policy areas:

- **Allied Interoperability**, where we undertake exercises such as RIMPAC/Fleet Concentration Periods, RED FLAG, COPE THUNDER, PITCH BLACK, TANDEM THRUST and GUNRUNNER. Mostly these focus on US and, separately, NZ interoperability and many are at the ‘first eleven’ level.

- **Regional Engagement** exercises such as IADS, PITCH BLACK and our recent involvement at the Jakarta Air Show all have a regional focus. We are not as big a player in this regard as other Force Element Groups (FEGs) and we would like to see this increased if possible.

- **Self Reliance**, where we conduct ADF focused exercises in our main roles of:
  - Land Strike - COPE JABIRU and Bombing Camps;
  - Maritime Strike - DAMASK and Fleet Concentration Periods; and
Army Support - SWIFT EAGLE, TAIPAN WATCH and NORTHERN PREDATOR.

These are but the main raft of the operational training activities conducted by 82WG.

**TRAINING THE NECESSARY EXTRAS**

All training is not focused on aircrew. I will not delve into here the complex world of training for our maintenance crews and logistic elements, this week has an operational ‘spin’, but I would like to touch briefly upon the ‘extras’ necessary, indeed vital, for operations and that require some measure of training. We at 82WG have a constant requirement to provide operations officers and F-111 role specialists to Army TACP and TACC Headquarters. In peace these opportunities are good exposure for junior aircrew, but in a contingency these aircrew will not be available - they will be needed to fly. We at 82WG have long identified this shortfall and have incorporated with our local Reserve unit, No 23 (City of Brisbane) Squadron, a training scheme for Reserve officers to meet these tasks. This has still some way to go, but it has made great advances in providing non-aircrew, role advisers to our sister Services. This training is being conducted to a syllabus and I have every faith that it will meet our requirements. The quality and enthusiasm of the Reserve officers is excellent.

81WG is responsible for the training of Army Air Contact Officers (ACOs). Nevertheless, one of our role specialities is the provision of precision fire support to Army units. Therefore, we are heavily involved through my Wing Army Liaison Officer in the training of ACOs. This is done during exercises and also by dedicated training periods conducted at various locations around Australia.

My Wing staff exercise, through me, command functions which we practise at such exercises as PITCH BLACK. There is more to being in Wing staff than just doing the paperwork and, whilst I have no formal training procedures for my staff in place, I do recognise that this is a shortfall and that the normal on-the-job methods may not suffice in the future.

Lastly, training for an expansion base involves the capability to increase our aircrew numbers within a period of warning. We currently conduct limited training in this regard by flying once a year selected ex-F-111C aircrew who are now in the civil airline industry. Similarly, selected officers in staff duties in Canberra remain in touch with our current thinking by limited flying exposure throughout the year.

**FINAL IMPRESSIONS**

In conclusion, I would just like to reinforce a few points. 82WG is at the end of the food chain and decisions made at higher levels concerning the future of the strike force have to be implemented in a practical sense by those of us in the Wing. This is the same for all of us here today, but the turbulence in the strike force occasioned by the plethora of modifications, updates and the introduction of new capabilities has forced us to look anew at both aircraft and aircrew. To accommodate this we have to adopt a paradigm shift and look for new methods to achieve a professional result. This turbulence has had an impact, most notably on our training methods and training capacity, nevertheless 82WG continues to
demonstrate an operational capability which exhibits exceptional interoperability with our major allies and has an important, if limited with respect to other Groups, regional focus. Lastly, the end game for the F-111 is not yet clear. Decisions made this year in the higher Defence processes will define the outcome. We will not reach a steady state until midway through the next decade and the challenges for our training that I have outlined here today will change not in intent or magnitude, but only in their detail. We will continue to meet them.

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NO 86 WING AND THE AIR TRAINING PROCESS

Presented by Group Captain Chris Spence
Officer Commanding No 86 Wing
Royal Australian Air Force

INTRODUCTION

The topic Current Issues and Future Directions in Training for Air Power is one which I am sure holds particular interest for all participants in the 1996 Regional Air Power Workshop. Not only are many of the air forces represented here in the process of upgrading their military aviation assets - in some cases quite substantially - but we are all faced with the rising costs of ownership and operations, and the associated challenge to achieve efficiencies. Further, as many of you may be aware is the case here in Australia, airspace constraints, noise pollution complaints and the broader environmental concerns of today’s society are all acting to limit the freedom and flexibility with which we previously operated. All of these issues impact directly on training for air power and will require a significantly different approach from that which has applied for probably the last 20 or 30 years.

This presentation will briefly cover No 86 Wing, the type of training undertaken at the Wing and the very close training relationships which have developed with a number of regional air forces. Over the next several years a number of projects will have a significant impact on our ability to undertake the current level of training activities within the Wing and these will be detailed. These same projects will bring with them the enormous benefits of simulation, dramatically changing the way we manage training in the future, the scope of that training and the resulting impact on the safety and effectiveness of operations.

NO 86 WING

For those not familiar with Air Lift Group (ALG), the flying element of No 86 Wing consists of three squadrons. No 36 Squadron operates 12 C130H Hercules aircraft in the tactical and strategic transport role. A further 12 C130E aircraft are operated by No 37 Squadron, primarily in the strategic transport role but with some limited tactical activities. Finally, No 33 Squadron operates five B707 aircraft in the strategic transport, air-to-air refuelling and VIP transport role. No 486 Squadron provides operational level maintenance for each aircraft type. Given that the ALG Mission is ‘to prepare for and provide effective and safe military airlift and combat air support for the Australian Government and the Australian Defence Force’, these four units are essentially available and often operate 24 hours a day, seven days a week, throughout the year. Air Movements Training and Development Unit (AMTDU) is a joint RAAF/Army unit which undertakes a range of activities associated with the clearance of air transportable and airdrop loads for all ADF fixed and rotary wing aircraft, together with related training for aircrew, airloading and air dispatch personnel and air movements teams. An Air Transport Operations Centre (ATOC) is also established which coordinates tasking of all air transport support provided by ALG - No 86 Wing and No 84 Wing (Caribou and HS748).
TRAINING ACTIVITIES

Since the C130 Hercules is an aircraft we have in common with many of the air forces represented here, many regional cooperative training initiatives and activities have been and will continue to be undertaken by No 86 Wing. The major training activities undertaken by both C130 squadrons include:

- three Pilot Conversion Courses, each of eight students annually;
- a total of two Loadmaster and two Flight Engineer courses, each of six students annually; and
- for No 36 Squadron, three Tactical Flying Courses each of a maximum of nine students (three crews).

Most of these courses utilise both the C130E and the C130H simulators, together with the regular emergency refresher check (ERC) currency training undertaken by squadron aircrew.

Over the last two years No 36 Squadron has utilised the C130H simulator to assist in ERC/Refresher training for seven RMAF crews in August 1994, ten PAF crews in October 1994, eight RTAF crews in April 1996, five PAF crews in June 1996 and seven RMAF crews in July 1996. In addition, one RTAF pilot is currently undergoing No 2/96 Pilot Refresher Course. Previously, we have also conducted full pilot conversion courses for RSAF personnel. While No 86 Wing is always pleased to offer this training where possible, as will be discussed later, there will be reduced opportunities over the next two to three years during the transition from the C130E to the C130J Hercules.

As was mentioned earlier, AMTDU consists of RAAF and Army components working together under RAAF command. The RAAF training courses include:

- Airman Aircrew Basic for all ALG aircraft types;
- Airloaders Course (AIRLOAD), involving general Air Movements Section (AMS) procedures;
- Air Movements Section Operators (AIRMOVSECOPS), including management and weight and balance considerations;
- Dangerous Goods Acceptance; and
- the C130 and DHC4 (Caribou) Airdrop Course, involving tactical flying and loading and airdrop procedures.

Army component courses include:

- Air Portability Team Leader and Unit Emplaning Officer, involving the conduct of air logistics operations;
- Basic Air Dispatch;
• Crew Commander and Supervisor Aerial Delivery, for load rigging and dispatch;

• Landing Point Commander Specialist for medium lift helicopter support functions; and

• Dangerous Goods Acceptance.

Air Movements Section Operators, Dangerous Goods Acceptance and Airladers Courses have included RMAF, RTAF and RSAF personnel over the last two years and opportunities for similar training will continue in the future.

Training activities which incorporate both tactical operations and airdrop obviously maximise the benefits of the activity. Exercise RAJAWALI AUSINDO is one such activity which has been conducted annually for several years, involving an aircraft and crew from No 36 Squadron and TNI-AU. RAJAWALI rotates between Australia and Indonesia, and will be conducted in October this year at Halim. The Exercise is held over a one week period and provides an ideal opportunity for airmen-to-airmen talks, in addition to the mutual benefits of tactical operations and airdrop training in unfamiliar environments. Following discussions in Kuala Lumpur earlier this year, No 36 Squadron and AMTDU will also be involved in tactical operations and heavy airdrop training with an RMAF C130, aircrew and dispatchers in November at Richmond. Given the current RAAF C130 involvement in both Exercise CHURINGA and the IADS ADEX, coordination of training with these activities should provide further bilateral opportunities with the RMAF in the future. On a broader note, regional involvement in the proposed Pacific Air Rally to be held in Guam next year offers further opportunities for cooperative tactical operations training.

Introduction into Service of C130J

The introduction into service of the C130J is a major event which will have a significant impact on the manner in which training is undertaken within No 86 Wing. Additionally, in the short term, the introduction will affect the ability of the Wing to offer training opportunities to regional air forces. The C130J is planned to be phased into service commencing in August 1997, replacing the C130E aircraft currently operated by No 37 Squadron. The C130J will bring with it a computer based approach to training for both aircrew and maintenance personnel. This represents a significant improvement on the current paper based approach and will allow students to progress in their own time at their own pace.

The overall training system will include:

• a Level Four System Familiarisation Trainer (SFT);

• two Cockpit Computer Based Instruction Carrels (CCC);

• a Flight Management System (known as the Communication Navigation IFF Management System - CNI-MS) Part Task Trainer; and

• a Level Five Full Flight Simulator.
The CNI-MS Part Task Trainer is critical to the aircrew training activity since other operators of glass cockpit Flight Management System aircraft, such as QANTAS, have emphasised that operation of the CNI-MS must be intuitive before training can progress to the simulator and finally the aircraft. While the C130J simulator is unfortunately not likely to be in service until 1999, a shortcoming which will hopefully be overcome through a cooperative arrangement with the RAF for access to their simulator, the remaining training systems will arrive early to mid-1997.

These systems will occupy the current Field Training Building, which also houses both the C130E and C130H simulators. While the C130H simulator will remain in service, the C130E simulator is expected to be decommissioned in early 1997 to allow for refurbishment of the major part of the building and installation of the C130J training equipment other than the simulator. The simulator itself will be separately housed with the new B707 Level Five Full Flight Simulator in a purpose built facility. Consequently, since the C130H simulator will be required to provide training for both No 36 Squadron and 37 Squadron crews, it is unlikely that there will be any excess capacity available to offer for regional cooperative training from now until 1999 at the earliest. That said, ALG is lobbying for an upgrade of the C130H simulator to Level Five standard. This is considered necessary since the current simulator lacks fidelity and is becoming difficult to support both, in hardware and software. Should the upgrade be approved, the result will be a facility which will have great utility for No 86 Wing and would potentially be available for regional cooperative training.

Use of Simulators

The tragic loss of a No 33 Squadron B707 in 1991 highlighted, among other things, the likely benefits of a capable simulator for the conduct of effective training in potentially hazardous manoeuvres, such as asymmetric and double asymmetric flight. With the arrival of the B707 and C130J Full Flight Simulators in early 1999, and hopefully the upgraded C130H simulator around the same period, the RAAF will adopt what is now the aviation industry standard approach to training which shifts many of the training sequences from the aircraft to the simulator. Many benefits will accrue from this evolution in training philosophy. The technology now available in Level Five Full Flight Simulators will allow significantly improved safety in operations through realistic training in such demanding areas as double asymmetric training, minimum control speed demonstrations and the introduction to tactical operations, including low level and night vision goggle (NVG) activities.

Significant economies in training costs will also be achievable, with the majority of conversion circuit flying, emergency procedures and subsequent continuation flying undertaken in the simulator. In the case of the B707, over 400 hours are expected to be saved, while for the two C130 squadrons, up to 3,000 hours are likely to be available for saving or reallocation. This is clearly a better option than acquiring and operating airframes primarily for training and allows a choice to be made between buying less aircraft to achieve the same operational capability or freeing resources to buy additional aircraft and, therefore, increased capability. Similarly, high cycle circuit training results in the accrual of aircraft fatigue up to 2.5 times more than through normal operational flying. There is an obvious flow on in terms of life-of-type and the likelihood of increased aircraft availability through reduced training activities.
The simulator will also provide a controlled environment in which to develop improved training standards, enhanced operational training through the development and trial of new procedures, and greater aircrew and supervisor confidence in emergency management through realistic training. Finally, aircraft noise and air pollution, together with airspace constraints, will place increasing limitations on military flying training activities. This is certainly an issue in the Sydney Basin here at Richmond, but applies elsewhere in the region, most notably Singapore. There is no doubt that embracing the full capabilities of simulation will minimise most of these environmental concerns through ground based training, leaving flying operations to continue with minimum disruption.

CONCLUSION

With the introduction of the C130J and the acquisition of Level Five simulators, No 86 Wing will complete the transition to computer and simulator based training by the turn of the century. As a result, significant benefits will accrue to the Wing and new opportunities will arise for regional cooperative training. In the interim, there will unfortunately be virtually no spare capacity with the current generation simulators. Nevertheless, No 36 Squadron may be able to offer specific operational training courses on an irregular basis and will certainly continue to participate in regional training activities and exercises. Of course, AMTDU will continue to be well placed to offer air movements and air dispatch training as required.

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DISCUSSION

Wing Commander Bills (RAAF): Will the C130 rate of effort be able to be maintained during the introduction of the C130J aircraft?

Group Captain Spence (RAAF): No - the rate of effort will decline and the Army is aware of this.

Group Captain Connolly (RAAF): If you move to a simulator basis for asymmetric flying, are you comfortable that students coming from FTS will fully appreciate the asymmetric situation? Will pilots ever get to see an asymmetric performance? Will we show them, say in a light twin?

Group Captain Spence (RAAF): No - there’s no need; the standard of simulator training is now that good, for example the QANTAS 747-400 simulator where all the pilot conversion is done on the simulator. Sure, we might go out and do a couple of asymmetric circuits just to show them the real thing, but the simulator should meet the requirement. There are no shortcomings, but I guess pilots will always tend to prefer the real aircraft to the simulator. Accepting the change is simply a matter of education.
OPERATIONAL SUPPORT GROUP TRAINING ISSUES

Presented by Group Captain Rick Jones
Commander Operational Support Group
Royal Australian Air Force

INTRODUCTION

Before raising the Operational Support Group’s (OSG) training issues that directly impact on our potential to deliver air power from bases in our northern Area of Operations (AO), I should briefly cover an overview of OSG’s structure, capability and the type of operations that will see our involvement.

With the transfer of rotary wing assets to Army and Caribou aircraft to Air Lift Group, the Tactical Transport Group found itself with no aircraft and therefore an inappropriate title, hence the formation of Operational Support Group. OSG is the only Force Element Group (FEG) not to have any aircraft but shares the common goal of existing to support air power.

OPERATIONAL SUPPORT GROUP

The OSG mission is ‘to plan, coordinate, activate and deactivate the support infrastructure and ground defence for forward air operations’. These are demanding tasks and, as I will discuss later, attract a large and diverse training bill.

OSG’s tasks, as defined by the Chief of the Defence Force (CDF), include air base services at bare base and point of entry airfields in a ground defence environment. Additionally, communications support is provided to tactical air control centres and parties as well as a number of joint service plans.

OSG Operations

The type of operations that will see our involvement are broadly separated into support for unsealed and sealed runway operations. Unsealed runway operations will be in support of Army at a point of entry and include Caribou and Hercules aircraft. Sealed runway operations from a bare base will generally be in direct support for the generation of air power, although could be used as a point of entry, and include support for most aircraft types. Other sealed runway operations include the provision of extra facilities at an already existing civilian airfield to support a higher rate of effort than could be normally be expected. The support can be for the full range of aircraft types in our inventory. This is provided within our harsh northern environment and includes the full range of base services that could be found on a main operating base. The capacity and sophistication of the service will be planned and coordinated depending on the nature of the support required. Our aim is to be as lean as possible using the absolute minimum of material and personnel resources.
OSG TRAINING

Although OSG has a considerable quantity of organic capability, particularly in terms of planning and coordination, personnel and equipment, there are a number of dependencies that require constant monitoring and attract a large training bill which in essence is outside the control of the Group. These dependencies include support from the main operating bases to ensure prepared contingency augmentation manpower and a serviceable deployment support fleet.

Contingency support personnel generate an extensive training bill and require considerable coordination when moving forward. The readiness of these personnel is dependent, in the first instance, on their home bases, which are responsible for ensuring the conduct and currency of their basic courses. These courses include such skills as weapon and basic ground combat training, fire and health, and specialist training to align with the post they will fill in the AO at their contingency air base wing.

The deployment support vehicle fleet which is spread across Australia requires constant monitoring to ensure its serviceability and is spread throughout most of the RAAF bases. Vehicle types include crew vans, 110s, fuel tankers, fire fighting trucks and runway sweepers. The bases where the vehicles are lodged are responsible for vehicle serviceability and for the necessary operator training.

Operational Support Group Organisation

![OSG Organisation Diagram]

Figure 1 - OSG Organisation

To achieve the OSG mission we are organised into three permanent wings, Airfield Defence Wing (AFDW), Operational Support Wing (OSW) and No 323 Air Base Wing (323ABW) at Townsville, as shown in Figure 1. Headquarters Airfield Defence Wing is located at RAAF Base Amberley along with two of its squadrons, one permanent and one Reserve. The other Reserve squadron is located at Tindal Air Base. The Headquarters of Operational
Support Wing is collocated with Headquarters Operational Support Group and 323ABW at RAAF Base Townsville. Operational Support Wing has two units, No 1 Operational Support Unit (10SU) collocated at Townsville, and the other, Air Transportable Telecommunications Unit (ATTU), is located here at RAAF Richmond. The Contingency Air Base Wings (CABW) are only under command for mobilisation plus the activation and deactivation processes. When not required for operations or exercises they are unformed and their personnel are spread over the entire Air Force.

Mobilisation Process

OSG is not only diverse in terms of geographic location but also in the type of skills and specialities all of which are used during the mobilisation process and later in the AO. The mobilisation process prepares and forms personnel into a cohesive team ready for operations. During this process new skills are taught such as survival to operate in the harsh northern environment. Additionally, standard operating procedures and plans are revised and then tested in a command post exercise designed to test all sections of the Contingency Air Base Wing under a variety of circumstances from routine administrative actions to launching air missions under threat of ground attack. These processes help the further development of plans, build confidence and start on the all important team approach. On completion of the mobilisation process all personnel are aware of the intelligence scenario, the environment that they are deploying to, method of lodgement, daily routine and their raison d’etre. They will be equipped, prepared and ready.

One of the more demanding tasks that is faced by OSG occurs as a result of the mobilisation process. The aim of mobilisation, as I have already stated, is to form a cohesive and well trained group prepared for forward operations. This requires additional training that is based on skill levels learnt at home bases. A requirement is therefore generated to check exactly what has been taught and to what standard, so that valuable time is not lost or wasted. This process can also be used as a feedback for the main operating bases so that their training schedules can be checked and modified where appropriate.

Ground Defence Training

In addition to these requirements OSG also provides an independent check of ground defence training conducted by the main operating bases. This is conducted by Airfield Defence Wing assisting base personnel during the conduct of their annual ground defence exercises. Prior to the start of these exercises, the AFDW team provides the cadre staff for a ground defence oriented command post exercise and then at exercise end provides feedback to the base commander regarding the effectiveness of his personnel. This not only assists the base commander to determine his ground defence readiness state but is also a feedback on the quality of training.

The standardisation of ground defence training has the possibility of being disjointed because it is conducted at many locations. We are attempting to remedy this potential problem by overseeing and orchestrating an annual base ground defence officers conference.

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DISCUSSION

Colonel Chua (RSAF): You mentioned that you draw people from all the major RAAF bases. Are these people identified for transfer to OSG when required? Are people at Pearce, for example, identified to deploy to a forward base?

Group Captain Jones (RAAF): Yes, people are identified. Pearce is not a good example as it is a Training Command base, but some people are identified for deployment. On an operational base like here at Richmond, where aircraft will deploy forward, there will be a lot of people ‘tagged’ (identified) to move forward to man the bare bases, as the base will need less people to stay behind to support what remains.

Group Captain Lintott (RNZAF): Do you conduct ‘survive to operate’ training for Force Element Groups?

Group Captain Jones (RAAF): FEG commanders are now responsible for training all personnel under command. Everyone who could be deployed forward must be able to ‘stand to’.

Group Captain Spence (RAAF): One of the problems we face is the lack of people on bases to conduct the necessary ground defence training. For example, here on Richmond, we have only three ground defence training staff to train all the members on the base.
CURRENT ISSUES AND 
FUTURE DIRECTIONS IN TRAINING
A HEADQUARTERS AIR COMMAND PERSPECTIVE

Presented by Group Captain Kerry Clarke, AM
Director Plans, Headquarters Air Command
Royal Australian Air Force

INTRODUCTION

The most recent change in training requirements from the Headquarters Air Command (HQAC) perspective is the need to control the use of resources. As budgets reduce and there is more focus on the effectiveness of training, there is a need to develop a process that quantifies the efficiency of training and allows selection of those training events which have maximum effect.

HQAC is an operational level headquarters charged with the preparation of forces for combat. As part of the fulfilment of that charter, the Headquarters facilitates exercise activity with other Services and regional and alliance partners. As Director of the Plans Branch in HQAC, I am commissioned with the facilitation task.

The Command Headquarters has undergone significant change over the past two years. The need to focus on core business has meant that more time is spent managing war fighting elements. This has been manifest on one hand by the increase in the number of Command Post Exercises (CPX) for the Headquarters and, on the other, through a more holistic approach to the training undertaken by elements of the Command.

EXERCISE EVALUATION

The operational level control of the activities of Air Command has undergone significant development over this year. Essentially, the historically developed methodology of reproducing last year’s activity schedule and adding new events as dictated by either the tactical or strategic level was no longer sustainable in the face of reducing resources.

One of the opportunities faced in modifying activity levels is a determination of the complete picture of activity across the Command. At the moment there are essentially four levels of training undertaken by tactical units:

- aircrew proficiency at the basic level (ie conversion courses);
- single cockpit operational proficiency (ie post-conversion training);
- combined force application where multi-force training is involved (either combined, joint or single Service) across differing types; and
• that training which is mandated because of some other reason (eg diplomatic, political or just at a whim of a controlling authority).

Initially the Headquarters only had visibility of some of these training evolutions and the degree of visibility varied across all force elements.

Defending Australia 1994

In building a new methodology, the purpose of our existence has to be the basic foundation. Defending Australia 1994 (DA94) is the current Government White Paper that explains how the Government will manage Australia’s defence into the next century. That paper outlines the Government’s fundamental responsibility to ensure Australia’s defence. The Government maintains the Defence Force and pursues national policies which support defence efforts, sustain favourable regional and alliance relationships, and contribute to global security relationships.

There are four elements underpinning the Defence policy:

• maintaining a Defence Force capable of ensuring that armed force is not successfully used against Australia;

• alliances and regional links and global security arrangements enhance the security environment by making attacks on Australia less likely;

• because Australia’s future security and economic prosperity are linked to the security and prosperity of Asia and the Pacific, the defence relationships underpin the development of other relationships in the region; and

• finally, the essential military capabilities provide a professional base that means that Australia is among the first countries to be called on to assist in international security and humanitarian crises.

It follows then that the tasks of the Defence Force are built on these foundations. In this case, the task at the operational level is to maintain a balance between the activities that go to make up these four elements and to ensure that the Government gets the best value for money in meeting those goals.

Resource Constraints

Times of diminishing resources make the task of ensuring the best ‘bang for the buck’ more difficult. As circumstances change both in the evolution of activities and the resources necessary for their completion, the reallocation process has the propensity to become disordered at best and chaotic at worst. Additionally, HQAC activity supports other Service customers. Their continually changing requirements, both as a result of resource changes and other imperatives, make a continual reassessment necessary.

The extant system provides neither a holistic view of the activities program, nor a mechanism for comparison of activity. Disparate systems exist. Each Force Element Group (FEG) has its own methodology and there are some summations of activities across
functional boundaries, for example in the Program of Major Service Activities (PMSA). The result makes it impossible either to determine appropriate balance or indeed if the activity should occur at all.

Separately, there are some events that are of limited value to the service provider. Air Lift Group (ALG), for example, provides extensive support to the other Services; support that is important strategically, but is more than that necessary for maintenance of ALG aircrew skills. Air transport support (ATS) is their *raison d’etre*, but we need to ensure the cost-effectiveness of that support.

As resources are constrained or activity levels increase, conflicts in resource allocation occur. Arbitrating variations to the activity schedule needs a methodology that allows comparison of competing demands and an easy assessment of the necessary support.

**Cost of an Exercise**

HQAC has developed an assessment tool based on the Microsoft (MS) product range that collates historical data for an activity and determines a total cost for the activity. Simply, all the available activities are entered with individual aircraft types as a separate line. Data is attached relating to the hours flown and crews trained or involved. Table 1 below is a theoretical example of a part of the spreadsheet.

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<td>$874</td>
<td>$14,263</td>
<td>$15,137</td>
<td></td>
</tr>
<tr>
<td>LUNGFISH 95 TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>$874</td>
<td>$14,263</td>
<td>$572,361</td>
<td>$596,706</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td>$4,062</td>
<td>$1,466,527</td>
<td>$572,361</td>
<td>$13,550,711</td>
</tr>
</tbody>
</table>

Table 1 - Sample Extract from Hypothetical Spreadsheet

The spreadsheet looks at all the exercises with which Air Command is associated and attempts to capture the **Total Cost** of the activity by taking account of planning, total CLAE, ordnance used and flying hour costs.

The flying hour cost is the current additional cost. This typically includes the cost of fuel, spares and normal servicing. The reason for using the additional cost is that, if the activity is cancelled and the flying hours are not redirected, then this is the only money that can be saved at the HQAC level. Hence our rationale is that our sub-program responsibilities are limited to the management of those resources under the command of ACAUST. Other costing regimes exist, but are beyond the operational level control.
<table>
<thead>
<tr>
<th>EXERCISE NAME</th>
<th>UNIT</th>
<th>ACF Type</th>
<th>FLYING</th>
<th>TOTAL</th>
<th>COST PER SORTIE</th>
<th>COST PER CREW</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHURINGA 95-2 TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>$2,276,100</td>
<td>$2,970,330</td>
<td></td>
</tr>
<tr>
<td>KANGAROO 95 TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>$10,687,905</td>
<td>$11,471,127</td>
<td></td>
</tr>
<tr>
<td>LUNGFISH 95 .92WG</td>
<td>P3O</td>
<td></td>
<td></td>
<td>$523,331</td>
<td>$1,095,712</td>
<td>$73,047</td>
</tr>
<tr>
<td>LUNGFISH 95 .36/37SQN</td>
<td>C130</td>
<td></td>
<td></td>
<td>$53,375</td>
<td>$63,375</td>
<td>$15,844</td>
</tr>
<tr>
<td>LUNGFISH 95 MISC</td>
<td></td>
<td></td>
<td></td>
<td>$15,137</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>LUNGFISH 95 TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>$586,706</td>
<td>$1,174,224</td>
<td></td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>$13,550,711</td>
<td>$15,615,581</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 - Sample Objective Costs Measurements

With this total cost measurement, the matrix has a look at a couple of objective cost measures as shown in Table 2. It looks at the cost per sortie and the cost per crew trained. The reason for the two measures is that some aircraft types lend themselves better to one measurement type than the other. For example, C130 operations are not well defined in terms of sortie rates, whereas fighters and strike are. C130 or P3 operations are better defined in terms of crews trained in a particular activity.

The advantage of this is that it enables a quick comparison of like activities for their relative cost-effectiveness and allows a comparison of the options for conducting a particular activity.

<table>
<thead>
<tr>
<th>EXERCISE NAME</th>
<th>UNIT</th>
<th>ACF TYPE</th>
<th>VALUE</th>
<th>RAFF</th>
<th>NAVY</th>
<th>ARMY</th>
<th>POL</th>
<th>EFFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHURINGA 95-2 TOTAL</td>
<td>Sortie Loaded Average Efficiency:</td>
<td>56%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KANGAROO 95 TOTAL</td>
<td>Sortie Loaded Average Efficiency:</td>
<td>59%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUNGFISH 95 .92WG</td>
<td>P3C</td>
<td>4.00</td>
<td>5.00</td>
<td>-</td>
<td>-</td>
<td>4.00</td>
<td>96%</td>
<td></td>
</tr>
<tr>
<td>LUNGFISH 95 .36/37SQN</td>
<td>C130</td>
<td>2.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>LUNGFISH 95 MISC</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 - Sample Matrix With Subjective Values

Table 3 shows the matrix with some subjective values added against the exercise or activity. Each exercise can be rated in terms of four subjective criteria; the value the exercise has to RAAF preparedness, its value to Navy and Army, and its value to National Policy (POL). Each of these criteria is given a subjective rating on a scale of one to five. A five indicates that exercise is extremely valuable in terms of the crews involved achieving Fully Mission Capable (FMC) status. In the example shown, Exercise LUNGFISH gives P3C crews the opportunity to track a number of different types of submarines and helps maintain their categorisation in the ASW role. The P3C participation in the Exercise is also valuable to Navy and the Exercise is a combined one with the USN, so the P3 participation can be scored in terms of three of the criteria. These empirical values are derived from information provided by the associated FEG. While the assessment is subject to examination, there is no perfect algorithm for assessment, thus we use the professional judgement of the activity provider.

Political value is an assessment factor provided by HQAC.
By way of comparison, if you look at the C130 involvement in the Exercise, it is straight transport support, in Australia to a RAAF Base, with no tactical training benefit for the C130 crew. Hence, the low index rating value to the RAAF shown for the C130 activity.

Each individual value is factored and an overall rating is arrived at for the exercise. The RAAF value column is given the highest priority; however, high scores in any of the other categories will increase the overall rating by aircraft type. You can see the difference between the C130 and P3C involvement in the Exercise.

The methodology for comparison is thus easy to interpret and provides a consistent approach to activity planning and comparison.

Thus, we now have a way of determining ‘bang for the buck’. The next requirement is to determine the appropriate balance between exercises or activity across the entire spectrum of activity.

**Defending Australia - Proportionality**

![Defending Australia - Proportionality Diagram](image)

**Figure 1 - Defending Australia**

Figure 1 is a hypothetical amalgam of activity when measured against the four pillars of the Defence policy - Defence of Australia (DoA) Skills, Regional Cooperation, Alliances and Humanitarian Support. While the White Paper does not rate the policy elements against each other, there is implicit ordering in the presentation of the elements. In our view the acquisition of and maintenance of DoA skills is paramount. This example shows that we are doing more regional cooperation than DoA skill acquisition. This tool allows readjustment of the overall activity program on a forecast basis to ensure balance across a chosen period.

While HQAC has gone into deeper analysis, with potential to provide balance by FEG and to cross link activity into the joint forum, we have not yet influenced the activity schedule to take account of those second order analyses. This latter step has been proposed to HQADF in the context of the upcoming review of all ADF activity.
Relative Inefficiency

![Relative Inefficiency Diagram](image)

**Figure 2 - Theoretical Example of Relative Efficiency**

Figure 2 shows another of the products of the analysis - a theoretical example of activity assessment. In this table, the larger the bar the worse the activity in terms of cost-effectiveness.

In developing any methodology we need to be aware of the pitfalls of slavish adherence to the model efficiency. I am reminded of the Vietnam experience where the US Office of System Analysis (OSA) took the quantification of combat to the extreme. The OSA was populated by 'whiz kids, most of them professional economists drawn from universities and think-tanks' - the technique is said to have been distinguished by:

- an attempt to clearly define the parameter of each separate problem as part of a larger problem and containing smaller ones, so that a chain of implications was created in which the nation's overall security problems were theoretically linked to the length of the skirts to be worn by female Pentagon employees;

- an effort at making the underlying assumptions explicit, so as to present a number of alternative solutions based on those assumptions; and

- the employment of quantitative means where quantification was possible.

Their results, though seldom very sophisticated mathematically, owed much to statistical evidence and were often expressed in terms of equations, which is one reason why system analysis acquired a bad reputation among those unable or unwilling to understand.
CONCLUSION

In spite of the statistical methodology weaknesses, however, there is a real need for a new activity evaluation tool. The tool needs to encompass all HQAC activity and rate each for cost and effectiveness. That effectiveness value should be drawn from the completing FEG, with an additional overvalue provided for the political worth of the activity where necessary. The tool has application across the entire ADF activity spectrum where subjugation of the aims of a single Service may occur in the search for the most efficient ADF.

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DISCUSSION

Colonel Chua (RSAF): What is the objective of capturing all the costs? Can you use this for determining budgets?

Group Captain Clarke (RAAF): Two reasons - First, you need to know what an activity actually costs, particularly for those aspects over which you have control, and second, resource implications necessitate us knowing what the real costs are. Obviously, we could take the model further in the future to a RAAF-wide basis to look at all Air Force activity.

Group Captain Kindler (RAAF): In terms of costing, you are only looking at exercises. The model doesn’t take into account training. In order to completely measure flying activity and flying effectiveness, you need to extend the model to cover training. The results can be skewed if you are only looking at exercises.

Group Captain Clarke (RAAF): I agree, and an extension to the model such as this could occur in the future. The system is still in its early stages and it would be naive to expect that it will still be the same in a few years.

Group Captain Shepherd (RAAF): What do we measure the relative efficiency of an exercise against? How about the effectiveness of the exercise and the realisation of objectives?

Group Captain Clarke (RAAF): This is something we need to look at. We are limited at the moment to basically the ADF Warfare Centre looking at whether specific objectives were achieved in the particular exercise. We need to investigate this further.

Group Captain Lintott (RNZAF): Are flying hours considered a product or an input?

Group Captain Clarke (RAAF): Flying hours are looked at on their own because we are resource driven at the moment. Essentially, money equals flying hours, but the cost of flying hours is not the total cost of the activity. At the moment, flying hours are an input but in the longer term, we may be able to move towards flying hours being considered as an output.
AIR POWER TRAINING IN THE INDONESIAN AIR FORCE
CURRENT ISSUES AND FUTURE DIRECTIONS

Presented by Kolonel Pieter L.D. Wattimena, S.IP
Director of Operations KOOPSAU II
Indonesian Air Force

INTRODUCTION

The Indonesian Air Force (TNI-AU) was formed in April 1946, just eight months after Indonesia gained its independence. Throughout the years after its formation, the TNI-AU has participated in many events defending our independence and also maintaining the unity of the nation.

According to the State Decree Number 20/1982, the missions of the TNI-AU are:

- as an enforcer of State sovereignty in the air, to defend the integrity of national air territory together with all components of other State Defence and Security Forces;
- to develop national potency to become State Defence and Security Forces; and
- to guarantee the security of all efforts and activities concerning the above mentioned missions.

TNI-AU TRAINING

In order to conduct the missions of State Defence and Security effectively, in the event of an emergency, the TNI-AU does not solely rely on the capability of its weapon systems and supporting facilities, but also relies on the maintenance of the high standard of its personnel and highly skilled units. For this purpose, the TNI-AU is trying, mainly through training (and exercise) in peacetime, to produce skilled TNI-AU personnel and form strong units.

In general, the aim of TNI-AU training is to provide all TNI-AU personnel with the necessary skills and attitude, to enable them to carry out their job and task effectively, individually as well as in cooperation with other personnel. The training system is designed to meet operational requirements and be in line with the development of science and technology, especially military technology. The techniques of training are directed as closely as possible toward the real situation and environment.

The training cycle in the TNI-AU consists of the following:

- Individual Training;
- Unit Training;

85
• Inter-Unit (Large Unit) Training; and
• Joint Training/Exercise of the Armed Forces of the Republic of Indonesia (ABRI).

**Individual Training**

Individual training is conducted in order to raise the skill levels of individual members of the TNI-AU, at their assigned posts, in accordance with their rank and profession. Individual training consists of exercise and drill to enable every TNI-AU person to carry out their task effectively. Each branch of profession in the TNI-AU (ie aircrew, radar and missile unit crew, airborne troop and support group) conducts its respective individual training at its own units or other units in charge of training for the job fields concerned.

For aircrew (pilots), this type of training is practised in stages as follows:

• First Stage, where pilots acquire the basic skills and attitude to conduct air operations.
• Second Stage, where pilots are supposed to attain certain standards of skill levels and attitude in practising air operation techniques and tactics.
• Third Stage, where pilots maintain their high level of skills and attitude.

The current conditions of pilot training in the TNI-AU cannot be regarded as satisfactory, due to the limited flying hours available. The TNI-AU is now making big efforts to increase the level of aircraft operational readiness and is readjusting the proportion of flying hours dedicated for training. Complementary to the flying training, TNI-AU also optimises the use of aircraft simulators available in the inventory. Simulators of F-5, A-4 and Hawk MK-53 are intended for full flight training, despite the fact of their low level of serviceability due to spare parts shortage. The TNI-AU acquired these simulators in the early years of the 1980s and there are always difficulties in maintaining their serviceability. To settle this problem, the TNI-AU is making R&D efforts to substitute some old parts with new components/cards available in the market.

For pilots flying aircraft which are also operated by airlines, national or foreign, (ie transport aircraft) the TNI-AU sends them to the companies where suitable simulators are available. In line with the acquisition of new combat aircraft, the TNI-AU has purchased and is now waiting for the delivery of simulators for the Hawk 100 (full flight) and F-16 (full mission) aircraft.

Other difficulties encountered in conducting air training mainly result from the growth and development of rural and urban areas. Some TNI-AU bases, which are the home base of TNI-AU squadrons, are used jointly with civil aviation. This condition limits the use of airspace over the base. The growth of commercial aviation in Indonesia has increased the number of commercial flight routes, in some areas overlapping TNI-AU training spaces, thus limiting training activities to ensure the safety of civilian planes.

There are also some TNI-AU bases located close to towns. In the last two decades, these towns have expanded tremendously so that these bases are now becoming part of the towns. Therefore, obstacles for flight training from these bases have increased substantially.
Furthermore, the continuing aircraft noise is now considered to be bothersome by people living around the base.

These kinds of problems also arise in the use of the TNI-AU air weapons range that is located in Java. Urbanisation of areas around this weapons range limits its use and the practice of firing live shells. The TNI-AU has now subsequently moved the conduct of training of air-to-air firing, air-to-ground gunnery and bombing to weapons ranges in Sumatra, Kalimantan and Sulawesi. Some fighter units have had to move from their home bases to practise this training. In part, this has caused the increase of training costs.

The air weapons range in Siabu, Sumatra is the most advanced training facility. It was jointly developed and is operated and used by the TNI-AU and Singaporean Air Force. Using this facility, fighter pilots from both countries are able to exercise and drill themselves in aerial combat tactics and manoeuvring. Evaluation of performance of pilots trained on the Siabu range tends to conclude that this facility really improves the effectiveness of aerial combat training.

**Unit Training**

Unit Training is conducted in order to produce powerful units capable of responding to various situations as an organisation. In the TNI-AU operational units, this training is practised at the level of element, flight and squadron. Unit training focuses on the conduct of unit tactics, techniques and procedures carried out by each member of the unit in cooperation with the other members as an integral team.

**Inter-Unit Training**

Inter-Unit or Large Unit Training is conducted for two purposes:

- to train units from TNI-AU Commands in executing air operations individually and jointly, in a coordinated and integrated manner, to respond to a certain contingency situation and environment, in accordance with the developed doctrine, procedures, tactics, techniques and air operation command and control system; and

- to test and evaluate the validity of procedures, task force organisation and command and control systems, and to test the operational readiness and performance of TNI-AU combat units and supporting groups.

TNI-AU Inter-Unit Training covers two exercises:

- Command Post Exercises, involving Command units training on maps; and

- Field Exercises, in which involved units are actually deployed and put into action.

Large Inter-Unit Training, known as ‘Latihan Angkasa Yudha’, is the highest level of training in the TNI-AU and involves almost all TNI-AU combat units. Latihan Angkasa Yudha is conducted on a yearly basis. According to State Decree Number 20/1982 mentioned above, civil aviation is a component of National Air Power (or State Defence and Security Forces in the Air). In the near future, civil aviation in Indonesia will be organised
as reserve forces to the TNI-AU. For this reason, the TNI-AU invited some civil aviation pilots as observers in Latihan Angkasa Yudha 1996 last June.

**Combined Training**

The Combined Exercise of the Armed Forces, involving combat units from the three Services, is conducted to implement doctrine and strategy in deploying land, naval and air forces in order to defend the integrity of national territory. As a result of our national development programs, rural areas in Indonesia are growing so that it is becoming more and more difficult to find a suitable place for conducting combined exercises.

**Joint Training**

Besides all the above mentioned training, the TNI-AU also takes part in joint training with other air forces in the region on a bilateral basis. This joint training mainly focuses on enhancing mutual understanding between the two air forces on air operations techniques and procedures.

**Future Directions in Training**

The future direction in conducting air power training in Indonesia will be aimed at two important matters:

- solving all current problems in conducting air training, and
- improving air training techniques.

To solve the problem concerning the low serviceability level of training equipment and facilities, the TNI-AU is developing cooperation with R&D institutions in the country to produce the replacements for components and parts that are no longer manufactured. Furthermore, such cooperation in R&D will also be developed with other air forces in the Asia-Pacific region, having a strong base in science and technology. On the other hand, the TNI-AU will study the possibility of opening the training facilities and equipment, for use by any other air force. The problem of the aircraft's low level of operational readiness will be solved through the improvement of the TNI-AU logistics system.

To improve air training techniques, the TNI-AU will take lessons from the bigger and the more experienced air forces, such as the USAF, RAF and RAAF. For this purpose, the TNI-AU is seeking the possibility of taking part in training or exercises conducted by those air forces.

**CONCLUSION**

As concluding remarks, it is important to note that the nature of air war dictates the necessity of every air force to have a good training system and techniques. To develop training systems and techniques, an air force may learn from another air force's experience,
and this can be achieved by having cooperation in training between air forces. Through training, people from different countries will also be able to develop mutual understanding that in turn will contribute to the development of peaceful relations between nations in the world.

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DISCUSSION

Group Captain Clarke (RAAF): It is interesting to see that you are faced with many of the same problems as we have, such as the lack of air weapons ranges.

Group Captain Shepherd (RAAF): How deeply does the Indonesian Air Force get involved in the role of armed forces support to the community? Is it involved as much as the Army?

Kolonel Wattimena (TNI-AU): Yes. If the activity is appropriate for air force, it is our response. We use Army, Navy and Air Force aircraft, and also use civilian aircraft.

Group Captain Connolly (RAAF): You said some pilots, such as those who fly F28 and 737 aircraft, go to the civil airlines for training and some work in the airlines, paid for by the company, and then they come back to the Air Force. Must they come back?

Kolonel Wattimena (TNI-AU): Yes they come back. We use some aircraft that are the same as civil airlines and, because of the limited flying hours available, we send pilots to the civil airlines to use their simulators and to fly for the company. After they gain experience, they come back to the Air Force. They are paid for by the civil airlines, but then they come back. All pilots get their commercial pilots licence (CPL) about a month after their 'wings' graduation. We send Air Force pilots to the civil airlines to gain experience.

Group Captain Harvey (RAAF): You mentioned that the aim of your training system was to provide Air Force personnel with the necessary skills and attitude. What training do you do for attitude?

Kolonel Wattimena (TNI-AU): We train our people to have the right attitude. That's why we can send them to the civil airlines and then get them back.

Group Captain Harvey (RAAF): But what activities are involved? What do you do to affect their attitude?

Kolonel Wattimena (TNI-AU): We try to give pilots encouragement to serve in the armed forces and we give indoctrination to be members of the Air Force and to act as military personnel.

Wing Commander Bills (RAAF): Concerning return of service obligations (ROSO), how many years do pilots have to remain in the Air Force after graduation?
Kolonel Wattimena (TNI-AU): Pilots come from two sources - First the Academy and second direct entry. They serve for 10 years after graduation and then have a choice to stay in the Air Force or leave.
CURRENT ISSUES AND FUTURE DIRECTIONS
OF THE ROYAL MALAYSIAN AIR FORCE
IN TRAINING FOR AIR POWER

Presented by Kolonel Zakaria bin Salleh
Chief of Staff, No 1 Air Division
Royal Malaysian Air Force

INTRODUCTION

Although the RMAF has been in existence for only the last 38 years, the last decade has been particularly significant in the context of training the RMAF in equipping itself as an Air Power of the Nation. The termination of counter insurgency warfare within Malaysia, and a shift of the Malaysian Armed Forces (MAF) towards conventional warfare, resulted in the MAF embarking on the procurement of new equipment and weapon systems. Similarly, the RMAF’s increasing participation in UN missions (hence its expansion into a global dimension of operations), coupled with the recent procurement of state of the art assets, means that the RMAF has taken a quantum leap in modernisation state, both as an organisation as well as in terms of the weapons systems used in the projection and employment of air power. These events called for changes in RMAF operational doctrine and training methodology. Its training concept and philosophy have undergone a revolutionary change based on a new defence perspective.

AIM

The aim of this presentation is to highlight current issues and future directions in RMAF training for air power.

CURRENT ISSUES

Doctrine

With the demise of the cold war and the onset of a new world order, South-East Asia, and in particular Malaysia, has no potential ‘enemy’. Thus, an Air Force developing its potential based on a defined ‘threat’ is no longer feasible, realistic, nor economically practical. The new perspective of a modern RMAF is therefore being developed within the ambit of air power based on ‘capability’, as opposed to building up force levels merely to meet an undefined threat.

What is a ‘capability’ driven Air Force? What is it training for and to what defined objectives does it aspire and expect to attain at the end of a training cycle? Answers to these questions formulate the very core of the training doctrine, concept and methodology
employed by the RMAF. Whilst military strategists and academics may argue that the principles of force development should be based on a ‘threat’ perception, the RMAF has focused the training ambit to achieve the terminal objective of ‘Operational Readiness’. In a nutshell, it is having the required hardware, software and human skill level (expertise), to ensure effective employment of air power. We have, therefore, evolved the following conceptual formula:

\[
\text{OPERATIONAL READINESS} = \text{Hardware/Software Availability} + \text{Knowledge} + \text{Skill Level} = \text{CAPABILITY}
\]

Based on this concept, the RMAF has rewritten and reoriented all of its training and operational doctrine. A new RMAF Air Power Manual has also been published. All of these publications will be our references in the present and future development of the RMAF.

Technology and Human Interface

Following the shift from a counter insurgency to a conventional warfare Air Force, the RMAF procured substantial numbers of aircraft and weapon systems. The procurement of these new generation fighters, long-range radar detection system, strategic and tactical air mobility platforms, electronic warfare gadgetry and modern air-to-air weapon systems has provided the hardware and software components of the RMAF air power capability. For the RMAF the greatest challenge is to ensure the equipment is in proper working condition and that personnel are trained to use and employ them effectively. Training has therefore been the main emphasis which focuses mainly on human and technological interface. Hi-tech training systems such as the use of computer based trainers (CBT), cockpit trainers and aircraft simulators (basic and full mission simulators), now become an integral component of training syllabi to develop and enhance human skills. The new concepts of training are presently being established in RMAF technical and flying establishments.

Skill Level Dimensions

Skill level development in the RMAF is looked at from two dimensions - ‘individual skills’ and ‘group skills’. Individual skill is the ability of an operator to effectively operate and employ a weapon system to its maximum effectiveness whilst group skill is the ability to operate as a team or a system, in the conduct of air operations to achieve mission objectives and goals. In essence, for example, the training to produce an ‘Ace Pilot’ only satisfies one dimension of skill development (individual); whilst the ability to operate together in a mixed force package to seek and destroy targets with a high DDE (desired damage expectancy), with minimum attrition, formulates the other dimension (group) of skill level enhancement. Individual skill therefore is the basic tool, whilst group skills are the applied tactics and techniques in the employment of air power in accordance with doctrinal perspective.
In this respect, we conclude that the individual skills within the RMAF are up to the required standard whilst there appears to be a general lacking in group skills which the RMAF currently is looking into. There is a need to re-look at the current single Service, joint and combined exercises in which the RMAF participates, to determine whether they contribute to an improvement in the RMAF group skill. For example, what contribution do IADS ADEXs give to RMAF group skill training, and hence our capability?

RECRUITMENT AND TRAINING

Air Force College

Being a technically orientated organisation, the Air Force has to employ people with the right background, attitude, skill and knowledge. The RMAF puts great effort into recruiting the right candidates into the Air Force and subsequently continues to develop and train them. In this respect, the establishment of the Air Force College as the RMAF basic officer training academy is a far-sighted move by the RMAF. Whilst the prospect of recruiting enough people with the right talents to join the Air Force is getting more difficult, the creation of the College will act as a ‘nursery’ for the RMAF. With an average intake of 100 candidates every year, the RMAF will be assured of at least 70 people with an aeronautical engineering background available to be trained as pilots. If for any reason they drop out, with their Diploma in Engineering they should be able to be employed as engineers. In a nutshell, this program will in the long run address the problem of shortage of candidates with the right qualifications and talents to be trained as pilots or engineers for the RMAF. The training concept of the Air Force College and officers’ career courses is shown in the following diagram (Figure 1):

![Figure 1 - Air Force College Training Concept](image-url)
Operational Conversion Unit (OCU)

Upon graduation from the Air Force College, the officers will be sent to the OCUs of either fighter, helicopter or transport aircraft. At the OCUs, emphasis is placed on the use of CBT, system procedural trainers, simulated maintenance trainers and the use of full mission simulators. The aim is to enhance operational training and hence enable officers to possess and enhance the skills and knowledge in operating/maintaining the new systems and roles.

Continuation Training

After a pilot has completed his operational conversion, he is required to undergo regular continuation training to maintain aircraft type and role currencies. Monthly and quarterly continuation training exercises must reflect the primary roles of the squadron, whereas other training may reflect the secondary roles of the squadron. The enhancement of group skills, such as mixed force packaging, usually takes place at least every six months in the form of single, joint or combined exercises. Training aids, such as use of full mission simulators for mission rehearsal, ACM range and live delivery at tactical ranges are very much required so that realistic scenarios with different threat levels can be simulated.

Operational Exercises

Operational exercises are conducted to assess and evaluate the standards and skills attained by an individual or an operational unit. These exercises may be confined to single Service, or they may be joint or combined. The RMAF participates in many of these exercises. We are currently, evaluating the feasibility of these exercises as to whether they benefit the RMAF. Priorities will be given to exercises which provide improvement in individual and group skills to improve RMAF capability and readiness states.

Exchange Programs

The RMAF will continue the exchange programs with foreign air forces, especially from developed countries. This will not only enhance operational training and the upgrade of skill and knowledge, but improve interpersonal and service relationships. The RMAF has so far been involved in pilot exchange programs with the RNZAF (F-5/A-4) and with the RAAF in the area of ATC/ADC. Based on my personal experience, I strongly recommend that this arrangement should go on.

Specialist Aircrew Training

In order to achieve a qualitative edge, the RMAF conducts specialist aircrew training to improve the quality of aircrew and their expertise so that they may be employed at a suitable appointments/jobs. These are Advanced Tactic Courses, Instructor Pilot Courses and Fighter Weapons Courses. Other overseas courses such as EW, Test Pilot and Intelligence Courses are attended by RMAF personnel.
CONCLUSION

In summary, the RMAF is undergoing a quantum leap of advancement. Its image as an 'in-support' orientated air force has been transformed into a conventional air force to reflect the 'Air Power of the Nation'. Its development is focused on being 'capability' driven as opposed to being 'threat' driven, such as the communist threat and so on. Therefore, hardware and software availability are equally important as to human and technological interface which are yet another significant prerequisite in establishing the RMAF capability. In an effort to quickly acquire the desired knowledge and skills to operate sophisticated equipment and weaponry, the RMAF has embarked on a redefined training philosophy and methodology, denoting the emphasis on development of individual and group skills. We believe that a strong foundation of knowledge must be acquired, not only in the aspect of technical know-how, but just as important, in the doctrinal aspects of training for the operational employment of air power.

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DISCUSSION

Group Captain Clarke (RAAF): Do you have any exchange slots planned with the US, or any F/A-18 or MiG-29 operators?

Kolonel Zakaria (RMAF): So far, our exchanges are only with Australia and New Zealand, not with the US. However, we would welcome any opportunity to participate in an exchange program with the US or UK.

Group Captain Connolly (RAAF): The idea of giving all academy students an aeronautical engineering background is good, but do you think it is in an any way restrictive or limiting?

Kolonel Zakaria (RMAF): I don’t believe it is restricting. Those who do graduate will have a better understanding and better prospects. Those who fail the Academy engineering diploma course can transfer to direct entry pilot training. Those who pass the engineering course but fail pilot training can be employed as engineers, with better prospects. The diploma also opens up the opportunity for later study for a degree.

Group Captain Spence (RAAF): Do you give any other courses than aeronautical engineering?

Kolonel Zakaria (RMAF): No, but it is still a new system.

Colonel Walford (Army): What was the rationale for changing the name from QFI to IP?

Kolonel Zakaria (RMAF): None. We don’t have a special school for IP, but we go to a special school for ground instructor training. The CFS concept is gone.

Kolonel Wattimena (TNI-AU): Do you have any arrangement with the RAF CFS to check instructors?
Kolonel Zakaria (RMAF): No, but we do have our own Air Force Headquarters examiners who travel around the squadrons doing checks, and the units also have squadron examiners for particular aircraft types.

Group Captain Harvey (RAAF): Almost all the other presenters so far have talked about training resource constraints. Do you have similar problems in the RMAF?

Kolonel Zakaria (RMAF): Yes. We are considering a number of ideas to save resource costs. We are looking at cutting back on the number of pilots we train. Next year, all effort will be on training, and we will be cutting back on exercises.

Wing Commander Bills (RAAF): We've all heard about the problems other services and countries have retaining pilots - do you have problems keeping pilots in the RMAF?

Kolonel Zakaria (RMAF): Yes, because they pass out with civil recognition. We also go for CPL endorsement with the award of 'wings'. The only solution is to train more.
CURRENT ISSUES AND FUTURE DIRECTIONS
IN TRAINING FOR AIR POWER
IN THE ROYAL NEW ZEALAND AIR FORCE

Presented by Group Captain Graham Lintott
Assistant Air Commander Support
Royal New Zealand Air Force

INTRODUCTION

May I start by thanking the Royal Australian Air Force and the Air Power Studies Centre for the invitation to attend this, the fourth Regional Air Power Workshop. It is vital for small air forces like the RNZAF to be able to participate in forums such as this, and we commend the RAAF for their initiative in organising these annual events, and thank you for your generous hospitality.

I intend covering the topic Training for Air Power in the RNZAF initially from the broader strategic perspective and then focusing down through the operational level, concentrating on operational training and interoperability, to finish with some comments on a particular training issue of the moment.

STRATEGIC SITUATION

To understand our defence policy and therefore to appreciate our training requirements, it is important to be aware of our strategic situation. New Zealand is small, isolated, and surrounded by great tracts of empty ocean. Our country is distant from the major sources of international conflict, it has relatively little strategic value other than its position on Australia’s eastern flank, and has comparatively modest natural resources. The waters which surround New Zealand constitute a formidable sea-air gap which any aggressor would have to be able to cross in order to pose a direct threat to our security. Few nations are capable of this, and none has shown any interest in doing so. It is against this lack of threat, but mindful of our international trade reliance and therefore vulnerable lines of communication, that New Zealand’s security strategy is set. It is referred to as ‘self-reliance in partnership’. Self-reliance requires an independent national level of capability which is sufficient to cope with immediate and low level contingencies. For higher level contingencies, the strategy relies on friends and allies to assist - the partnership. Our forces must therefore be capable of dealing with small contingencies independently, but just as importantly we need to be competent and capable of contributing to collective efforts when required. Our continued contribution to collective security will depend upon the political will to do so, the compatibility of our equipment and, most importantly, the ability of New Zealand Forces to be able to operate effectively with our partners in a combined setting. Interoperability is necessary at all levels - strategic, operational, and tactical - and cannot be expected to work without considerable training and practice. In this regard, the RNZAF
relies on allied air forces, and in particular the RAAF to assist in providing quality air power training.

RAAF - RNZAF RELATIONSHIP

The security of Australia and New Zealand are entwined. A threat to one would immediately be felt as a threat to the other. However, despite the commonalities of our geography, language, institutions, and origins of many of our citizens, it was not until the 1960s that we seriously focused on our defence relationship. This came about as a result of two events. Australia’s defence strategy changed to emphasise self-reliance in the defence of Australia, which naturally included the issue of its eastern flank - New Zealand. At the same time, New Zealand’s anti-nuclear policy resulted in its suspension from the ANZUS alliance. New Zealand without its American partner become much more reliant on Australia for the maintenance of its defence capabilities, and Australia found itself forced into a more demanding defence relationship with New Zealand.

Despite occasional calls of ‘bludging’ and ‘arm twisting’, the relationship has developed significantly and is formally known as Closer Defence Relations (CDR). CDR is seen as a evolutionary process to promote complementary force structures, interoperability, and coordinated long-term planning. For all intents and purposes, our defence relationship with Australia has replaced ANZUS as the cornerstone of our security. Commensurate with this, the RNZAF conducts a significant amount of training with the RAAF.

At the higher levels, RNZAF officers attend the Australian College of Defence and Strategic Studies, the Joint Services Staff College, the RAAF Command and Staff College, and the Air Power Studies Centre. We use ADF joint procedures, and most of our joint warfare training is conducted by the ADF Warfare Centre, where there is a New Zealand officer permanently on the staff. At the lower level, we have Officer Cadets attending the ADF Academy, and there are many exchange posts, both short and long-term, which cover most branches of our Services. At the practical end of air power we conduct a number of bilateral and multilateral training exercises in concert with the RAAF covering the range of our Force Element Groups. The RNZAF has a Skyhawk Squadron based in Nowra, NSW, which provides air defence training for the RAN; this arrangement is mutually beneficial as it provides valuable training for our Air Attack Force in the maritime environment, which is clearly paramount to New Zealand’s security, and also provides valuable training for the RAN in defence against air attack.

The RNZAF - RAAF relationship has always been close, but it has developed significantly during the last decade and it is certainly our wish that this continues. Naturally the RNZAF has more to gain in the partnership than the much larger RAAF but we can provide modest but competent forces to a collective effort provided that we continue to train seriously to operate together.

RNZAF AND OTHER AIR FORCES

Having said that our focus is on training and operating with the RAAF, I do not wish to give the impression that our other allies are becoming less important.
Although the RAF has a lessening impact on the RNZAF, we still value our contact with the RAF through exchange posts, courses such as RCDS and the RAF GD Aerosystems Course, and air exercises particularly for the maritime and transport elements. Despite our defence relationship hiccup with the United States, we still conduct training at their facilities; USAF Air War College Courses, Senior Defence Resource Management Courses, Tactical Air Transport Courses and simulator training are all continuing. In time it is hoped that the relationship will thaw enough to allow New Zealand to participate in training and exercises with US Forces to the same extent that other regional nations enjoy.

As a result of the ANZUS rift, the RNZAF has had to look further afield for some training. As a result of this we are now conducting more bilateral training with Canada, particularly in the maritime environment.

Although we value our training contact with American and European forces, it is with our own region that we are becoming more focused. Our most important trading partners are in Asia and the Pacific, therefore the stability of this region is paramount to New Zealand’s interests. Consequently, we will continue to develop the longstanding ties we have with South-East Asian Air Forces in order to build confidence and interoperability. We have a traditional commitment to the FPDA and welcome the concept of Exercise FLYING FISH next year - it is through these higher level multilateral exercises that we can learn the most. The Government has signalled a desire to become even closer to South-East Asia and defence cooperation and training is part of that. As well as the FPDA exercises we are keen to continue the bilateral Air Attack Force training recently conducted with Thailand and Indonesia, and to develop other training to our mutual benefit. The recent decision to provide full-time Defence Advisers to our embassies in Thailand and The Philippines, which up to now have been covered on a part-time basis, should lead to further training opportunities.

**AIR POWER EXERCISES AND TRAINING**

For a small Air Force, the RNZAF is served rather well by its internal training system and the opportunities available for training with other air forces. We produce a high quality product from our in-house training system and maximise our operational capability within a constrained budget with internal and external training and exercise opportunities. However, there are two areas of concern and both are linked to the level and intricacy of training for the air war.

Since New Zealand’s suspension from ANZUS, the RNZAF has had less exposure to major exercises. We would like to take part in more complete air power packages and have more access to calibrated or fully instrumented ranges. Exercises such as RIMPAC, COPE THUNDER, TRIAD, KANGAROO, and PITCH BLACK are not available to the RNZAF and our operational effectiveness is affected accordingly. While exercises such as FLYING FISH and KAKADU are very good, we need more of them, and Exercises WILLOH, TASMANEX and SWIFT EAGLE, while providing good training, are not complete substitutes for the larger and more complex exercises. Until such time as the RNZAF can participate in these exercises at the tactical and operational level, our operational capability will not be as effective as it could be.
The second area of concern with our air power training is at the operational level of war. This is where the air campaign planning occurs and it is a level which is often overlooked in a peacetime air force, particularly a small one like the RNZAF. Squadron Leader S.A. McKenzie of the RNZAF published a thesis while he was at the RAAF Air Power Studies Centre titled Strategic Air Power Doctrine for Small Air Forces in which he comments that the operational level is the lost level of doctrine.

The RNZAF has command levels equating to tactical, operational, and strategic operations but effectively operates at only two levels - tactical and strategic.

A scarcity of operational doctrine and a lack of air campaign planning experience often results in strategic level doctrine and thinking collapsing down on top of the tactical level. In a small air force primarily engaged in peacetime training and small, joint or combined operations, this abbreviated structure can be made to work quite effectively. Over a period of time, however, this new structure will blinker the small air force into only thinking and operating tactically. This is very near the mark in the RNZAF's case.

The collapsed structure has an attractiveness in peacetime because there is very little demand to maintain battlestaff skills, and it is administratively frugal. The risk is that once the operational level and its function has been reduced, the skills and the true purpose of that level will be lost from the corporate memory.

The RNZAF has recognised this problem and the CAS is refocusing the RNZAF to a more operational level and concentrating the thinking towards air power employment rather than merely providing air assets as a service to a customer. It will take some time to change our thinking and the process will not be complete until we have practised and exercised properly at the operational level. The last time we had proper experience at this was during Exercise TRIAD 1983 - most of the officers involved with that exercise have now retired. In the meantime, the RAAF have agreed to consider employing RNZAF officers during the planning phase of some exercises, and to allow observers of key positions during exercises themselves.

Arguably, New Zealand will never have the assets to fight an air war independently and will always be a junior partner. Nevertheless, professional advice to the New Zealand Government regarding the employment of RNZAF air power is essential to our national interest and must therefore be competently provided. This will not be possible if we have never had experience of, or practised at, the operational level of war.

**RNZAF PILOT TRAINING**

Finally, I would like to briefly discuss a recent decision regarding RNZAF pilot training. The RNZAF is critically short of pilots. The shortage is most serious at the junior officer level and is the result of our training system not producing as many pilots as have been released from the Service during the last six years. The main reasons for the low production is aircraft availability, particularly of the Macchi 339C, which is the advanced trainer. As a result of a pilot sustainment review, the RNZAF intends to cease its traditional universal pilot training and introduce streamed training. This is the best way to produce the required number of pilots, in a cost-effective manner, without compromising quality. A team is about
to be formed at Headquarters Air Command to effect the implementation of streamed training.

**CONCLUSION**

In conclusion, the current issues facing the RNZAF in training for air power are ones of training quality and the continuing development of interoperability with our allies.

There is no foreseeable threat to New Zealand but our survival is reliant upon international trade, therefore it is in our best interests to promote international stability and particularly within the Asia-Pacific region. We are not a large or wealthy nation, and this combined with the low threat, dictates a very modest Defence Force. However, we wish to play our part as a good citizen and our forces are structured to provide an independent low level contingency capability and to contribute force elements to combined operations at the higher end of the scale. We are therefore reliant upon our regional allies to train with us to mutual benefit. Obviously we look mainly to our trans-Tasman big brother for the lead in doctrine and operational training, but concurrently wish to continue our traditional close relationship with ASEAN nations. Training to develop better interoperability with our allies is vital to our defence strategy and is the key training issue facing the RNZAF in the next decade. The optimists among the RNZAF see a future thawing in our US relations so that RNZAF participation in more complex exercises will be acceptable. Combined with this is our desire to redevelop some experience to operate at the operational level war.

Although we currently have a pilot shortage, we will overcome that in the medium term. However, if we fail to secure sufficient resources to enable effective joint and combined operational training to be completed, our operational effectiveness will reduce to such a level that the production of more pilots will be mainly nugatory.

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**DISCUSSION**

*Group Captain Connolly (RAAF):* You mentioned that the RNZAF plans to introduce streaming for pilot training. One of the main criticisms of streaming is its lack of flexibility and its possible impact further down track. What is the New Zealand view on this?

*Group Captain Lintott (RNZAF):* We don't see it as a limiting factor at all. There is about 100 hours of common training on the CT4, then the air attack pilots go straight to the Macchi for 115 hours advanced training. The helicopter and multi-engine pilots do about another 40 hours on the CT4, followed by 65 hours on helicopter or multi-engined conversion aircraft. If people want to swap from one stream to the other, depending on their experience level they could slot in on the advanced phase. This would at most add about an extra four months. We have had no problems in the past with pilots moving from one role to another - Iroquois pilots with four year's experience have gone to C130s, P3s and A-4s in the past with no problems. Experience and situational awareness can carry over from one aircraft type to another.
Colonel Chua (RAAF): You mentioned New Zealand’s close alliance with Australia and you talked about your lack of experience at the operational level of war. Do you see any role for New Zealand in HQAST?

Group Captain Lintott (RNZAF): It is something that is mentioned from time to time when talking about Australia- New Zealand links, but sovereignty issues would need to be considered and addressed for any sort of combined headquarters. Obviously, we would need to look at what was in the best interests of New Zealand as a whole, and the NZDF in particular. As far as the RNZAF is concerned, it would not be our intention to provide much more than small numbers to operate with Australia. There is no intention, to have an entire AO responsibility. We would envisage being fitted into the RAAF ORBAT under OPCON or OPCOMD, not as a separate force.

Wing Commander Bills (RAAF): Given that you use Australian ADFPs, is there any thought being given to establishing a HQAST look alike?

Group Captain Lintott (RNZAF): We have separate Operational Headquarters for Navy, Army and Air Force, and we are nowhere near as mature in joint thinking in certain levels as Australia. There are still some ‘turf battles’ and single Service traditions and jealousies etc. Our short to medium term future is more likely to be further developing jointery between the Operational Commands, rather than developing a HQAST look alike.

Group Captain Harvey (RAAF): There is close interaction between the RNZAF and the RAAF, but what about interaction between the RNZAF helicopter operators and the Australian Army on helicopter operations?

Group Captain Lintott (RNZAF): There is probably not as much as we would like at the moment. We once had an exchange program with 9SQRN and we do operate together with the Australian Army for exercises, such as SWIFT EAGLE. On the Navy aviation side, we do a lot of training with the RAN. An exchange between our helicopter operators could be considered when the Andover/Caribou exchange ceases in 1998.

Captain Eames (RAN): The RNZN takes part in RAN Fleet work up training.

Group Captain Harvey (RAAF): Referring back to the question of streaming, where do we stand in the RAAF?

Group Captain Connolly (RAAF): In effect, we stream now in the RAAF but it is being looked at in more detail, including streaming before graduation.

Group Captain Lintott (RNZAF): In the past, streaming was always dismissed as an option for the RNZAF but that is no longer the case. We do have an imperative to train more pilots as there is no longer enough. We have to produce 25 pilots per year for the RNZAF to continue. Streaming is the only answer. We are also looking at bringing in a ‘university training’ system to employ people when we start to get more pilots (to hold the surplus). It is possible in the future that pilots may fly only for three to four years. If they don’t make captaincy or QFI criteria by that time, they may not fly again.

Wing Commander Susans (RAAF): Has any thought been given to Australia and New Zealand developing and operating a common flying training school?
Group Captain Lintott (RNZAF): I believe that there have been two studies on this in recent years. On both occasions it was not considered suitable nor feasible, but it was agreed to review the option again in the future.
TRAINING FOR AIR POWER
IN THE PHILIPPINE AIR FORCE

Presented by Colonel Nelson G. Eslao, GSC
Assistant Chief of the Air Staff for Education and Training
Philippine Air Force

INTRODUCTION

The Philippines is now an active participant in the rapidly changing and economically vibrant Asia-Pacific region where new challenges to defence and security are expected. The Armed Forces of The Philippines (AFP) Modernisation Program, which was signed into law on 23 February 1995, is a top priority program to match these emerging trends.

The Philippine Air Force (PAF) remained to be the country’s first line of defence, a mandate that demands a credible Air Force requiring well trained pilots, maintenance personnel, an efficient and responsive logistics system, and capable support personnel. The Command is likewise at the forefront of support for the Government’s developmental and environmental program through the AFP’s IMPLAN 'UNLAD BAYAN'.

Notwithstanding these vital concerns, the PAF has not changed significantly in its training profiles. Little variation in operational and support training has been made, and defence cooperation training with other countries has to be maintained.

AIM

This presentation aims to expound on upgrade training for PAF personnel in order to be a credible exponent of air power from 1996 onwards. It will cover the future training direction of the PAF, some issues that might hamper the modernisation program of the PAF and strategies to be taken in order to attain our training objectives.

PAF FUTURE DIRECTION

Our training for air power is directed at attaining a force capable of defending the country against any intrusion from hostile countries, and of being a credible partner in the nation’s socioeconomic development.

In order to sustain these roles, all activities must be geared towards the realisation of a self-reliant Philippine Air Force capable of developing its own resources to be at par with global technology.
This objective can be achieved through our education and training philosophy of 'developing human resources to become professional soldiers imbued with proper values and relevant expertise'.

Along this line, we envision development of our personnel as professionals through innovative education and training so that each person will be equipped with the proper knowledge, skills and values essential to the accomplishment of the PAF mission and functions.

While we have clearly focused on where we want to be in the future, relevant issues and concerns may muddle the picture if not properly addressed.

**ISSUES**

Albeit determined, to achieve the objective of advanced technology, the Philippine Air Force has to deal with several issues and concerns, to wit:

- After scanning the level of our technology, it is observed that there is a wide disparity between ours and the technology of most advanced countries. Most equipment is in obsolescence while the technical knowledge of our personnel has not been updated.

- The Air Force is confronted with a fiscal problem which is reflective of the country’s current state of economy. However, we plan our modernisation as a modest take off from where we are now.

In essence, these issues, if not given due attention, will hamper our momentum for the modernisation program.

Issues and concerns are attendant factors in all undertakings. These are things with which even affluent countries have to contend. For an undertaking to be carried out successfully, appropriate strategies have to be considered.

**STRATEGIES**

**Preparatory Training**

As a step towards attaining a credible air defence posture, our personnel must be trained vigorously vis-a-vis the new equipment to be procured.

We are determined to bridge the technology and knowledge gaps with affluent countries. We intend to strengthen the foundation of technical knowledge of our personnel as a long-term strategy by upgrading our technical training centres. This is primarily aimed at preparing our personnel to handle equipment which we will acquire or develop in the future.

We are also working on our immediate training requirement that will make our personnel capable of operating equipment that will be in service a few years from now. This will be
undertaken through transition training from the current state of technical skills. This is in preparation for the specialisation training for the upkeep of equipment acquired.

To keep abreast with the world’s latest technology, availment of training similar to the Defence Cooperation Program (DCP) with as many allied countries as possible will be optimised. As a matter of fact, Australia has the highest number of PAF personnel undergoing technical training under the DCP. This will be complemented with a similar training program with local institutions and a joint-user agreement with civil government agencies.

As a corollary, capability build-up must consider equipment that will cater to the needs of both military and civil institutions. The procurement process must not lose sight of the best package, particularly on technology transfer. Hand-in-hand would be technical capability build-up that will strengthen our education and training program; career course in-country and abroad. This will widen the horizons of our personnel, particularly in the field of doctrine development.

**Realistic Air Power Training**

As soon as the PAF has transitioned to new equipment, the focus of training will be expanded progressively. As the AFP will be structured leaner but meaner, interoperability with air and surface forces will be emphasised to attain greater operational effectiveness. As experienced in our recent campaigns, operations of any magnitude require the interdependence of each service capability to ensure strategic victory. Taking this as a lesson, joint training will be pursued with zealous determination.

The PAF had been participating in numerous joint exercises but needs systematic improvement and evaluation on the relevance of each exercise vis-a-vis the requirements of the AFP mission.

On the other hand, bilateral exercises in compliance with Defence Cooperation with other countries will be undertaken (this activity seldom happened in the past due to the wide disparity of aircraft technology for air exercises). Cognisant of the role of every nation for international peace, the PAF will join a dynamic, fast-paced environment for multinational force exercises.

While these training programs are designed for force projection, they are also supportive of the developmental and environmental programs.

**CONCLUSION**

In the pursuit of attaining a credible air power capability in the Philippines, we have embarked upon a modest program of human and material resources development through our AFP Modernisation Program.

While we intend to acquire state-of-the-art equipment, we will see to it that our human resources foundation in technical training is duly strengthened and maintained through the PAF training centres, local civilian institutions and Defence Cooperation Programs with
other countries. It is premised that, with developed human resources, other programs will follow suit to propel us towards our vision of a self-reliant Air Force.

After taking off from the modest modernisation program, the PAF envisions developing into a credible force for air power from its present capability until it is capable of joining multinational force training. These plans will ultimately support the development of The Philippines' economy.

With this direction, the PAF can set its target towards greater roles, such as the maintenance of regional peace and security.

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DISCUSSION

Group Captain Shepherd (RAAF): Do you see assistance in the future coming more from ASEAN countries, rather than the traditional US?

Colonel Eslao (PAF): We cannot do away with the traditional support provided by the US, such as training. But, since we are in the region, we think it more proper that we should be involved with the regional countries in the area.

Group Captain Harvey (RAAF): A question regarding pilot training. From where do you draw your people for your flying training school?

Colonel Eslao (PAF): Students for pilot training come from three sources. Firstly, the Academy (a tri-Service Academy); secondly from the Philippine Air Force Pilot School (these are college graduates) and, third, from the Officer Candidate School.

Group Captain Harvey (RAAF): In terms of the current Philippine Air Force, is there any role for navigators or use of a 'navigator type' crew person?

Colonel Eslao (PAF): We have one aircraft used in the maritime role which uses navigators.

Group Captain Clarke (RAAF): What is the time for implementing your expansion plan?

Colonel Eslao (PAF): Fifteen years.
TRAINING FOR AIR POWER IN THE
REPUBLIC OF SINGAPORE AIR FORCE

Presented by Colonel Allan Chua
Commanding Officer RSAF Flying Training School
Republic of Singapore Air Force

INTRODUCTION

Good afternoon, gentlemen. I am Colonel Allan Chua, the Commanding Officer of the RSAF Flying Training School (FTS). My associate is Major Calvin Chin. He is one of the Flight Commanders in the Training Squadron. We are both based at RAAF Base Pearce in Western Australia.

Although I am based in Australia, I am the man responsible to Headquarters RSAF for pilot production in the Air Force. The Flying Training School conducts flying grading and pilot training up to Wings standard. My presentation this morning is aimed mainly at providing you with an update of the RSAF pilot training system and the role of the Flying Training School.

RSASFlying Training

RSASF Mission

The mission of the Flying Training School is to produce competent military pilots with excellent flying skills, a high degree of professionalism and good officer qualities to prepare them effectively for their vital role in the Operational Squadrons. Our mission statement is no different from any modern air force. We train pilots for the Operational Squadrons, so our system must be geared towards meeting the requirements of the Operational Squadrons. Additionally, we are always conscious of the fact that trainees acquire their basic flying skills and develop their officer qualities and Service attitudes during the crucial years that they are with us in FTS. Instructors have a powerful influence on students during their formative years. Our instructors come directly from the Operational Squadrons, and who better to prepare them for the Operational Squadrons than the fresh operational pilots themselves.

Principal Considerations

In Singapore, we greatly lack training airspace. For this reason:

- we have to deploy overseas for our training and make full use of the overseas training opportunities afforded to us by the host country;
• we need to make use of the latest advances in the Visual Simulation Technology to support flying training; and

• we are also very tight on manpower resources with a small population base. For this reason, we need to:
  
  – where possible, recruit every available pilot;
  
  – minimise wastage in the training system;
  
  – streamline the pilot training system to minimise overheads; and
  
  – get a pilot to combat ready status as quickly as possible.

**FTS Organisation**

![Diagram of FTS Organisation]

**Figure 1 - Organisation of RSAF FTS**

The RSAF Flying Training School is organised as follows:

• HQ FTS is split into FTS Singapore and FTS Australia. Standards Squadron and No 130 Squadron are deployed at RAAF Base Pearce, while the rest of the sub-units are back home in Singapore. As CO FTS, I am overall in charge. I am also the permanent Detachment Commander of the RSAF deployment at Pearce. Because of my overseas location, the Deputy CO FTS is delegated the responsibility of making the real-time decisions necessary for the safe and efficient conduct of flying training operations in Singapore.
• Standards Squadron conducts Flying Instructor Courses, develops Flying Instructional Techniques and functions as the testing agency for all QFI checks and upgrades. They are the quality control agency for flying training. They are a mini-CFS equivalent.

• No 130 Squadron conducts basic pilot training on the Siai Marchetti S211 Jet Trainer.

• No 150 Squadron conducts advanced jet pilot training on the A-4SU Super Skyhawk. There was an earlier plan to deploy this Squadron to RAAF Base Amberley, but it did not materialise because of the noise problem.

• No 124 Squadron conducts helicopter pilot training using the AS 550 Fennec helicopter.

• Airgrading Flight conducts ab initio training for pilot selection.

• Aviation Flight conducts the ground school on aviation subjects to support the basic and advanced phases of training.

Pilot Training System

Our pilot training system has evolved over 27 years of RSAF flying training history. It is not entirely unique; while it incorporates the fundamental pilot training philosophy common to most modern air forces, it is designed to meet the specific pilot training needs of the RSAF.

Candidates apply directly to join the RSAF as pilots in response to advertisements or recruitment talks, but we cannot leave it all to chance. Since all young Singaporean males must do National Service (NS) when they reach the age of 18, we short-list those who meet the pilot medical criteria when they register for NS and undergo the medical examination. They are then individually invited to apply for the post of pilot trainee in the Air Force.

• **BMT (12 weeks).** After recruitment, the trainee will undergo the normal Basic Military Training (BMT) together with his NS cohorts in the Army.

• **SAPS/Airgrading (17 weeks).** Before they start flying, the trainees will attend a camp at the Outward Bound School. In this camp they will be doing ground exercises under observation, and are assessed for their teamwork and leadership qualities in what we call the Situational Assessment for Pilot Selection (SAPS) program. They are then airgraded on the SF 260 piston prop aircraft where they fly 21 sorties, all dual. At the end of airgrading, a Board sits and selects suitable pilot candidates for further training.

• **Tri-Service/Service Term (11/8 weeks).** The trainees then join their Army and Navy counterparts for the Tri-Service Term at the Officer Cadet School at the Safti Military Institute, our new military academy for officer training. On completion of this 11 week programme, they branch out to their respective Service Terms, and here our members learn more about the Air Force, its roles and organisation.
• **Ground School (8 weeks).** They then come back to FTS and complete the pre-Basic Ground School at Aviation Flight and prepare for departure to Western Australia.

• **Basic Phase (27 weeks).** The Basic Phase is conducted on the S211 jet trainer deployed at RAAF Base Pearce. The training involves general handling, instrument flying, night, navigation and formation flying. The excellent weather, uncluttered airspace and short transit time to the training areas allow good sortie rates and quality time for flying instruction. Our new S211 Simulator will also be arriving at the end of the year, and it will provide the latest in simulation technology to provide better student learning reinforcement and preparation for flying training. This phase consists of six modules. At the end of Module 5, trainees take the Basic Handling Test. We then hold a streaming board, chaired by CO FTS, and decide on their suitability for either fighters or helicopters. Those assessed suitable for fighters are then given some exposure to fighter-type sorties in Module 6, where they do Tactical Formation, Cine Weave and Basic Fighter Manoeuvres.

• **Ground School/Simulators (5 weeks).** The trainees return to Singapore for the pre-Advanced Phase Ground School and simulator training. At this stage, they again join their contemporaries from the Army and Navy in the centralised Commissioning Parade, held in the Safti Military Institute, where they are commissioned as 2nd lieutenants.

• **Advanced Phase (Fighters) (47 weeks).** Those going to fighters will be posted to 150 Squadron for Advanced Jet Training on the Super Skyhawk A-4SU. There are six modules which include GH, IF, FORM, NAV, NIGHT, BFM, ACM, and Air-to-Ground training over the first four modules, while the last two modules incorporate the Fighter Lead-In Course, where Air Combat Tactics and Ground Attack Tactics are taught.

• **Advanced Phase (Helicopters) (23 weeks).** Those going on to helicopters are posted to 124 Squadron to do Basic and Advanced Rotary Wing Flying training on the AS 550 Fennec helicopter.

At the end of the Advanced Phase, successful candidates are finally awarded their hard earned pilot’s ‘wings’. They are then posted to the Operational Squadrons. Our training system is sometimes referred to as the ‘All Jet Training System’. This is true if you look at the training of fighter pilots, because after airgrading, which is part of the selection process, the rest of the flying training up to ‘wings’ is done on jet aircraft; viz, the S211 and the Super Skyhawk A-4SU. This came about when we brought the Super Skyhawk down into the Flying Training School for the Advanced Phase and Fighter Lead-In Course. Although ‘wings’ are awarded after about the same time as before (135 weeks), fighter pilot graduates will require a shorter transition time to operational status. Transition to other fighters (ie F-5 and even F-16) is also expected to be faster, because they already have those fast jet hours under their belt.

While All Jet Training describes the fighter training process, I prefer the term ‘Integrated Flying Training System’, as it describes the RSAF pilot training system more comprehensively and takes into account the rotary wing training component. The transport pilots come from those who are re-channelled from fighters but, starting later this year, we
are streaming trainees directly from the basic phase to the Fokker 50 for the Transport Wings Course. So the system now allows early streaming of trainees according to their potential flying capabilities, a plus factor from the manpower resource optimisation standpoint.

**Attrition.** Of course, one of the most important considerations with any training system is that while we want quality, we have to guard against the risk of high attrition and losing the slow starter, especially since the learning curve has steepened with the introduction of a fast jet like the Super Skyhawk into the FTS syllabus. To be sure, we have a careful pilot progress review system in place and trainees are given additional ‘flex’ sorties as required to help them pass the course. The syllabus is also reviewed regularly and fine-tuned based on the feedback from both trainees and instructors and, most importantly, the Operational Squadrons. We have also introduced Computer Aided Instruction (CAI) so that trainees can learn their subject matter and prepare for flying at their own time and pace. We are presently having some discussion with the ADF in this area as we see great possibilities for joint development projects of mutual benefit.

**ISO 9002 Certification.** We are always concerned about the quality of our training. As mentioned before, Standards Squadron does all the checks on the quality of flying instruction. But sometime last year we decided to adopt the International Standard for Quality Systems ISO 9002:1994. It contains the specification for quality assurance in production, installation and servicing, and we found it very applicable to our training system in terms of pilot production. All our internal processes and documents have been aligned to the ISO system. Our Flying Training System was audited by the inspectors from the Singapore Institute of Standards and Industrial Research (SISIR) Certifying Body, and in April this year we were awarded ISO 9002 Certification.

**CONCLUSION**

In conclusion, let me say that the RSAF pilot training system has evolved over 27 years. We don’t think we have a perfect system yet and will continue to look at ways to improve the system, to train pilots better, more effectively and efficiently, and to keep up with the operational requirements of the Air Force.

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**DISCUSSION**

*Group Captain Spence (RAAF):* How long did it take for you to get ISO 9002 accreditation?

*Colonel Chua (RSAF):* One year.

*Group Captain Spence (RAAF):* During the accreditation process, did you use additional people from external sources, or just your own in-house personnel?
Colonel Chua (RSAF): We used primarily our own personnel, apart from an initial consultant. Our unit people went on courses and we employed two logistics consultants. It also involved a major rewrite of procedures to align with the accreditation requirements.

Group Captain Clarke (RAAF): What did you expect to gain from accreditation?

Colonel Chua (RSAF): In the past, our internal processes were not always the best and were not fully recorded. They were internal processes only and there was a lack of paper work. Ensuring an ISO quality system forces us to be more disciplined and allows anyone new in the organisation to learn about the system. There is less requirement for individuals with corporate memory. In addition, because it compares us with an international standard, it gives us a boost to know that we are meeting an internationally recognised standard. It gives us more confidence in our training system and allows future people to see the system clearly.

Group Captain Connolly (RAAF): How well does validation work? Is airgrading predictive?

Colonel Chua (RSAF): This system has only been in use for two years or so. It must be given time to stabilise. There is not enough data as yet to be certain that the airgrading predictions are correct. Those trainees that are doubtful, still go through flying training and rely on further training to bring them up to standard.

Colonel Eslao (PAF): Do you have a system for determining assignment to different aircraft?

Colonel Chua (RSAF): We do at the end of Basic Phase. The factors we consider are the trainees aptitude, spare capacity and their ability to handle stress. In addition, a subjective assessment is given by the instructors for each course. The CO and instructors sit down and consider each individual. All pilots are required to make Category B. If they don’t make Cat B in fighters, they may go to transport or helicopters; probably transports more likely than helicopters. When pilots reach Cat B, as part of their career development they go from the Squadron to Flying School for instructor training or to staff jobs.

Wing Commander Bills (RAAF): You mentioned that you recruit students at National Service age of 18. Is there any scope for later entrance?

Colonel Chua (RSAF): If a member comes from university at say age 22 he could be selected for pilot training, but such university students tend to be sponsored by the RSAF. The oldest age at which people are accepted for pilot training is 26.

Group Captain Lintott (RNZAF): Does the Singaporean Defence Force have any mutual assistance programs with other countries? Is the Singapore pilot training system open to other countries?

Colonel Chua (RSAF): At the moment, we are very short on pilots. Therefore, any offer of slots on our pilot training courses would be at the expense of our own training. This subject is a matter for others in much higher places than I to decide on. We have done some pilot instructor training in the past for Brunei personnel, but this stopped when we moved the FTS to Australia.
Group Captain Kindler (RAAF): Do you run an FCI Course or an equivalent?

Colonel Chua (RSAF): We have run such a course on an ad hoc basis as required on type, but it is very type specific. For the F-16 our members go to the US for training.
ROYAL THAI AIR FORCE - PILOT TRAINING SYSTEM

Presented by Group Captain Derek Promprayoon
Director Air Training Division, Directorate of Operations
Royal Thai Air Force

INTRODUCTION

In this presentation I will address the following topics:

- the selection process,
- flying training,
- the training aids,
- current cooperation, and
- a summary.

RTAF Flying Units

RTAF flying units comprise 11 Wings and one Flying Training School, as shown in Figure 1. The pilot training organisation is divided into two parts; one is basic training in Flying Training School and the other is the advanced training in operational squadrons.

Figure 1 - RTAF Flying Units
SELECTION PROCESS

The Selection Phase is broken down as follows:

- **Prerequisites.** The qualifications for RTAF pilot recruitment are graduate students of RTAF Academy (Bachelor Degree), with good eyesight, physical fitness, full medical check-up and psychological testing.

- **Selection Committee.** The RTAF assigns the Selection Committee and all student pilot candidates are processed by this Committee. This processing comprises interviewing, aptitude testing and psychological testing. A combination of these results is used to evaluate and select student pilot candidates.

FLYING TRAINING

Student Pilot Training

- **Ground School Training.** Aviation ground school and survival course are conducted at Flying Training School. The main objective is to prepare the student pilots before flying training phase. They have to undertake studies in many kinds of aviation subjects, such as aircraft systems, aerodynamics, meteorology, air traffic procedures, aviation medicine, compression chamber testing and survival course. All subjects relating to the aircraft and basic principles of flight will be introduced.

- **Primary Phase.** The Primary Phase consists of the fundamentals of flight, take-off and landing, basic instruments, basic aerobatics, two-ship formations, night flying and navigation training. The student pilots have to follow the Flying Training Syllabus. Flying training is conducted on the CT4-A/B aircraft, requiring 46 sorties and 65 flying hours.

- **Advanced Phase.** Successful pilots from the Primary Phase are streamed to Fixed-Wing Section and Rotary Wing Section. The Fixed-Wing Section is conducted on Pilatus PC9 aircraft, and Rotary or Helicopter Wing Section is conducted on a light training helicopter, the Bell 206B3. The syllabus consists of four weeks for academic ground school, aircraft systems and a refresher of aviation subjects. The flying training covers the basic principles of flight and development of basic flying skill. It consists of advanced aircraft handling, take-off and landing, advanced instrument flying, close formation (two to four ships), aerobatics, night flying and navigation. This training requires 96 sorties and 135 flying hours.

Operational Squadron Training

The successful student pilots from Flying Training School will be streamed according to their capability and potential to the operational squadrons; fighter, transport and helicopter squadrons.
• **Fighter Squadrons.** The new potential fighter pilot will be allocated to the Fighter Lead-In Course. The main objectives of this course are to provide trainees with a good understanding of aircraft systems, avionics and fire control systems, the fundamentals of fighter operations, basic air-to-ground gunnery, tactical formation and navigation, and to apply tactics. The training course requires aviation academic ground school and a total of 50 sorties and 57.3 flying hours, conducted on L-39 aircraft. After finishing this course, these pilots will be assigned to the operational fighter squadrons to fly F-16, F-5 and L-39 aircraft. Training in the operational fighter squadrons requires an average of 59 sorties and 61.4 flying hours to keep their proficiency. The flying phases cover air-to-air and air-to-ground gunnery, basic box pattern, applied tactics, night operations, combination of forces, and any kind of flight support training.

• **Transport and Reconnaissance Squadrons.** Some of the new pilots will be allocated direct to reconnaissance squadron, and the rest will be assigned to the air transport training squadron at WING 46. The training is conducted on N22B Nomad aircraft and entails the fundamentals of transport aircraft flying, aircraft systems, circuits, navigation, night flying, instrument flying, route training and simulator. Successful pilots will then be assigned to the operational transport squadrons to fly medium and heavy transport aircraft (A310 Airbus, Boeing 737, C130H and G-222).

• **Helicopter Squadrons.** Helicopter pilots will be streamed to helicopter operational squadrons at WING 2. The training is conducted on S-58T and Bell series helicopters. The flying syllabus covers the fundamentals of helicopter flying, aircraft systems, circuit training, basic and advanced flying techniques and operations, navigation and night and instrument flying.

**THE TRAINING AIDS**

Pilot proficiency can be enhanced by training aids. These aids can help the pilot with cockpit/avionics familiarisation very well. Some kinds of flying training that have risks associated need training aids to enable them to be conducted, such as emergency procedures. The capability of training aids, especially, can save on the costs of training.

**Flight Simulators**

All pilot training processes need flight simulators but, unfortunately, this is very expensive equipment. The RTAF has acquired part task trainers and full mission simulators to support flying training. As an example, just for fighter pilot training, we now have a Cockpit Procedure Trainer for the L-39 aircraft and simulators for F-5 and F-16 (on Procurement Process). For transport pilots, the RTAF sends them to be trained on flight simulators both in-country and abroad; the Airbus and Boeing pilots train at Thai Airways International and C130 pilots have to be trained in Singapore.
ACMI Range

The RTAF set up an Air Combat Manoeuvring and Instrumentation Range (ACMI/R) in 1984. The ACMI/R is located adjacent to WING 1 (approx 120 nautical miles north-east of Bangkok). It is a circular area of 30 nautical miles diameter and it can control eight aircraft for high activities and 12 aircraft for low activities. The ACMI/R is used to support air-to-air and air-to-ground combat training. It can provide live controlling, replay and debrief for trainees. The system also has a capability to assess and score (No Drop Bomb Scoring - NDBS ) for the trainees.

Conventional and Tactical Range

The flying syllabus for fighter pilots covers all kinds of weapons delivery, so conventional and tactical ranges are necessary to support this training. Fighter pilots have to keep their weapons delivery proficiency by flying at least six sorties every six months of the training cycle. The RTAF has two gunnery ranges at LOPBURI and KON KHAEN provinces, named ‘CHANDY RANGE’ and ‘NAMPHONG RANGE’. CHANDY RANGE can support both live and dummy munitions, while at NAMPHONG only dummy munitions can be used.

CURRENT COOPERATION

Joint and combined exercises show the mutual cooperation between the fellow countries. They can enhance the pilots’ experience in peacetime and enable the setting up of Standard Operating Procedures for each other and, most importantly, they make for a closer relationship between our fellow countries. The joint and combined exercises in which Thailand currently participates comprise:

- **COBRA GOLD** Joint/combined exercise with US
- **COPE TIGER** Multilateral joint exercise with US and Singapore
- **AIR THAMAL** Joint exercise with Malaysia
- **ELANG THAINESIA** Joint exercise with Indonesia
- **THAI KIWI** Joint exercise with New Zealand
- **THAI BOOMERANG** Joint exercise with Australia

CONCLUSION

The RTAF welcomes the mutual cooperation between fellow countries in this region. For the next fiscal year, Thailand will start the 8th Economic and Social Development Plan. The significant focus of this Plan will concentrate on human development. The RTAF has to make a plan and conduct operations to serve this national Plan. So we hope to see close
relations and cooperation continue between our fellow countries in every area, not only military cooperation.

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DISCUSSION

*Group Captain Shepherd (RAAF)*: When you send heavy transport pilots to the airlines for training, is there any return of service obligation attached or any agreement with the airline not to poach Air Force pilots?

*Group Captain Derek (RTAF)*: No. There is no significant problem in this regard.

*Group Captain Harvey (RAAF)*: Do all pilots go through the Air Force Academy?

*Group Captain Derek (RTAF)*: Yes. Every pilot has to finish Academy before going to Flying Training School.

*Group Captain Connolly (RAAF)*: The CT4-A basic trainer aircraft have now been in service for over 12 years. Do you have any plans to replace them?

*Group Captain Derek (RTAF)*: Yes. We have plans for them to be phased out in the next three years.
THE AUSTRALIAN DEFENCE FORCE WARFARE CENTRE

Presented by Wing Commander Eric Bills
Royal Australian Air Force
Deputy Director Doctrine (Air)
Australian Defence Force Warfare Centre

INTRODUCTION

Good afternoon gentlemen. I’ve been asked to say a few words about the ADF Warfare Centre and its role in training for air power.

During World War II, Australia was involved in joint and combined operations in nearly every theatre. To exploit the lessons learned and further develop procedures for joint operations, the School of Land/Air Warfare was established at RAAF Laverton in 1946. In 1948, the School moved to RAAF Williamtown in New South Wales and, in 1958, the name was changed to the Air Support Unit. In 1968, the Chiefs of Staff Committee directed that the Navy be included, and in 1975 the Australian Joint Warfare Establishment (AJWE) was formed.

Independently, the Australian Joint Anti-Submarine School (AJASS) was established at NAS NOWRA in 1951 and was concerned with the teaching and development of joint anti-submarine warfare, tactics and procedures. In 1986, AJASS was reorganised to form the Australian Joint Maritime Warfare Centre (AJMWC) and its role was expanded to cover all facets of joint maritime warfare, with the exception of amphibious and support operations, such as naval gunfire support.

In July 1990, AJWE and AJMWC were amalgamated to form the Australian Defence Force Warfare Centre (ADFWC) with integration at RAAF Williamtown occurring in December 1990. With the formation of the ADFWC, the Australian Defence Force commenced a new era of joint warfare training and doctrine development.

ADFWC RESPONSIBILITIES

Charter

The ADFWC is a joint service unit established to study, develop, teach, promulgate and provide advice on Australian joint operations doctrine, procedures and tactics, including administrative support for operations. The ADFWC is also required to assist joint headquarters and agencies in joint warfare matters.
Additional Responsibilities

In addition to the Charter, the ADFWC is responsible for:

- overseeing the joint aspects of single Service doctrine to ensure conformity with ADF joint doctrine;
- providing a wargaming capability at the strategic and operational levels of war;
- validating doctrine through exercise evaluation and analysis;
- producing and amending the ADFP Joint Operations series of publications;
- maintaining an analytical data base for all joint, combined and selected single Service post exercise reports; and
- establishing and maintaining an ADF Peacekeeping Centre.

Organisation

The ADFWC has a staff of about 80 personnel, including 13 RAAF members. The Centre is divided into four cells:

- Doctrine Wing,
- Training Wing,
- Peacekeeping Wing, and
- Wargaming Wing.

A Coordination and Support Wing provides administration, coordination and support for courses and computer management.

Courses

The ADFWC conducts a series of courses throughout the year ranging from basic introduction courses through to advanced. These include the following:

- **Joint Warfare Seminar.** For LTCOL(E) and RAN CO/XOs designate, which examines contemporary factors influencing planning for combined and joint operations at the strategic and operational levels of war.

- **Joint Operations Planning Course.** A two week course for senior CAPT(E) and MAJ(E). The aim of the course is to train officers in the planning of joint operations.
- **Joint Offensive Support Course.** A two week course held annually to train selected officers in firepower coordination and airspace management.

- **Joint Maritime Warfare Course.** A one week course is conducted twice a year at RANSWARS for MAJ(E) and LTCOL(E). The aim is to instruct selected officers in the planning of joint maritime operations.

- **Joint Maritime Tactical Course.** A one week course which instructs junior officers and senior NCOs in tasking and employing RAN and RAAF assets in joint maritime operations.

- **Introduction to Joint Warfare Course.** A one week course which introduces junior officers and senior NCOs to the planning of operations in a joint environment.

- **Joint Communications Planning Course.** A two week course held annually to instruct selected communications officers and senior NCOs in developing Joint Communications Support Plans.

- **Joint Electronic Warfare Course.** A one week course held annually to introduce selected officers and senior NCOs to developing a Joint Electronic Warfare Supporting Plan.

- **Amphibious Operations Planning Course.** A one week course held annually to instruct W02(E) to MAJ(E) in the fundamentals of planning for and executing amphibious and military sea transport operations.

- **Joint Movement Course.** A two week course held annually to prepare W02(E) to MAJ(E) for joint, or joint-related, movement appointments.

- **Joint Health Planning Course.** A two week course held annually to train selected officers in planning health support for joint operations.

- **Maritime Air Surveillance Course.** A four week course is conducted annually to train foreign students to assist with the organisation and implementation of a basic national surveillance system.

- **Overseas Students Joint Warfare Course.** A three week course for overseas officers only, held annually, to introduce them to the planning and conduct of Australian Joint Operations.

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**DISCUSSION**

*Group Captain Connolly (RAAF):* How will you train staff for HQAST, particularly in campaign planning?
Wing Commander Bills (RAAF): We don’t have a formalised plan as yet on how we will train HQAST staff. It will depend on the structure, formation and organisation of HQAST.

Group Captain Shepherd (RAAF): We have the ADF Warfare Centre, DARA, APSC and the Maritime Studies Centre. Do we see some point in the future when all doctrine will be run by a joint ADF organisation, rather than single Services each having their own doctrine areas?

Wing Commander Bills (RAAF): We may see something like that in the future, but we still need the single Service basis for the development of doctrine.

Group Captain Harvey (RAAF): In any event, joint doctrine is supposed to be based on single Service doctrine. I understand that the formation of a joint organisation was looked at in the past but there was resistance from the Services, particularly from Navy and Air Force.

Wing Commander Evans (RAAF): The single Services are very jealous of single Service doctrine development.
GENERAL DISCUSSION

Chaired by Group Captain John Harvey
Director Air Power Studies Centre
Royal Australian Air Force

Group Captain Harvey (RAAF): Several speakers have highlighted the shortage of trained people and the requirement for increased training, and how this problem is compounded by the lack of instructors. How can we overcome this problem? Is lateral recruiting an answer? What other options are available?

Group Captain Connolly (RAAF): Commercialisation may help overcome this problem to some extent. If we use commercial organisations for some training, then we don’t have to have a big bank of instructors in the Service, but while commercialisation can help, it is not a universal panacea.

Group Captain Shepherd (RAAF): We need to look at the whole structure of the officer corps. I understand New Zealand has made some radical changes in recent years to the way in which people are posted.

Group Captain Lintott (RNZAF): A few years ago in the RNZAF, people were shifted for the sake of shifting them. We decided that we needed to overcome some of the problems and dissatisfaction associated with moving people. We brought in some changes to the way in which we post people, and every job in the RNZAF is now advertised and anyone who has the required qualifications can apply. As a result, people feel that they are now in charge of their own destiny. We still have ‘directed’ postings but we’ve cut down on the number of them - less than two per cent of postings are now ‘directed’. The scheme was brought in for airmen about six years ago. It proved so successful that it was also brought in for officers up to Wing Commander level about two to three years ago. For Wing Commanders, it’s a bit contrived due to the small numbers, but for Squadron Leaders and below it works well. However, it still doesn’t stop people leaving to go to the airlines etc. For example, a Flight Lieutenant who leaves and goes to the airlines, within about five years, gets about the same salary as our CAS.

Colonel Chua (RSAF): In Singapore, a ‘market adjustment’ is paid. After 12 years, we offer members permanent service, hoping to retain about 30 to 40 per cent of each cohort. I’m not sure on the exact status of the scheme or the precise figures. The RSAF does not have a significant pilot retention problem, but we still lose some good people who could have made COs.

Group Captain Jones (RAAF): A hypothetical suggestion - if we did away with 2FTS and went to a commercial organisation to provide basic pilot training, we could save two to three years out of each pilot instructor’s career, which would give them more time available for operational squadron flying.

Group Captain Connolly (RAAF): One problem with that suggestion is that basic flying training instruction is best for instructor/QFI development. It is better for QFIs to go to Flying Training School initially, before going to a squadron for QFI duties.
**Colonel Zakaria (RMAF):** In Malaysia, we look at getting Instructor Pilots (IP) back to the squadron as soon as possible. Our pilots do about five years on the squadron, then they are ready for QFI training. After QFI training, they go back to the squadron, rather than to Flying Training School, so as to give maximum benefit and maximum return.

**Colonel Eslao (PAF):** The Philippines has three airlines and the PAF also has a pilot retention problem. We are looking to solve the problem by training more pilots.

**Group Captain Connolly (RAAF):** The new ten year ROSO, which will be fully in place in the RAAF by the year 2000, will make things much easier for us. It will give us a very stable population from which to man the junior pilot positions.

**Captain Eames (RAN):** But you need to get a sustainable turnover. It’s all a matter of the balance required. You need to strike the optimum loss rate and make sure you don’t lose people for negative reasons, as that results in less predictability.

**Colonel Wattimena (TNI-AU):** In Indonesia, we have a ten year ROSO from basic course.

**Group Captain Harvey (RAAF):** Another subject that has been raised by several speakers is that of simulation. What are people’s thoughts on the increased use of simulation to reduce resource usage in flying training?

**Colonel Chua (RSAF):** In the RSAF, we have computer-based training for learning checks, controls, and some limited flying training for procedures. The current simulator we use in the RSAF is basically a procedural trainer - good for familiarisation and training students in checks and procedures - but it does help minimise the workload on instructors. With the arrival of our new OFT, we should be able to do about 20 to 30 sorties in the simulator. We are aiming for about a ten per cent reduction in flying, but we are a bit cautious at the moment until the OFT is proven. We see the OFT as a ‘training enhancer’, at least initially. In the long-term, however, we think a ten per cent reduction should be achievable, and that expected ten per cent saving was enough to justify the cost of the OFT. The main thing is enhanced training - that is, we minimise instruction time in the air and get better value from the air sorties, as familiarisation and procedures will already have been sorted out on the ground in the OFT.

**Colonel Walford (Army):** Basic pilot training at Tamworth at $350 per hour is cheaper than a simulator, but I would be surprised if we couldn’t save something like 30 per cent at the ADF Helicopter School if simulation was used.

**Group Captain Connolly (RAAF):** We need to justify simulators in terms of cost savings. There are limitations on the use of simulation in basic flying training. We are not currently tasked to look at this matter but, for basic flying training, I would see simulators being used more for enhancement. Part task trainers are a better option for basic training, and they might help progress students faster.

**Group Captain Kindler (RAAF):** Simulators can replace aircraft hours, but the F/A-18 itself is really only a simulator for the combat environment. The aircraft itself is a part task trainer, as we don’t fly in a combat environment. Simulators, then, can be better than the real air environment, but we need to adopt a more holistic approach to training.
Captain Eames (RAN): The Navy experience is that simulators are best in the operational environment and they can justify their cost in about three to four years. They can also be used for the development of tactics and procedures.

Group Captain Shepherd (RAAF): We can get great simulation now but we are not getting simulator instructors. To get best value from simulators, they need to be run properly. You need full-time, fully trained simulator instructors - civilians, ex-military people who are fully trained.

Group Captain Spence (RAAF): I have some reservations with the use of civilians as simulator instructors. ALG has a simulator officer who is almost full-time. Civilian instructors can be out of touch with current operations.

Group Captain Harvey (RAAF): Another observation on training for air power. Is training for air power focused too much on pilots? What about others? What about training at the operational level? What should be done in the way of training, say, for 'air campaign planning'?

Group Captain Clarke (RAAF): HQAC is preparing a training plan for air campaign planning, but it is really only procedural training. For squadrons, you really need some sort of wargaming or simulation training to address this aspect. When its up and running the Wargaming Centre at the ADF Warfare Centre will help, but we need to quantify the quality of the output. As far as developing skills for a person who walks into HQAC from a squadron, we need to do the training in-house, and we need to assess the requirement and training required. The Wargaming Centre might be able to do it for us, but we have yet to see.

Captain Craig (RAN): We have heard from various overseas people of the scheme where air force pilots go and spend some time with the airlines. Is there any scope for such a scheme in the RAAF? I believe QANTAS is trying to get a two-way exchange. What are your thoughts?

Group Captain Spence (RAAF): It all comes down to cost and pay. The bottom line is that pilots leave the Air Force and go to the airlines for better pay.

Group Captain Harvey (RAAF): To conclude this session, I'd like to get your thoughts on possible topics for future Regional Air Power Workshops.

The following suggestions were made for topics to be addressed at future Workshops:

- Management of airspace.
- New roles for air power in the 21st century.
- Opportunities for cooperation between air forces and civil airlines.
- Logistics and economies of scale.
- Regional cooperation.
- Surveillance.
- Air power in support of land operations.
- Concept of Reserves and human resources management.
- Safety vs Standards.
- Simulation and wargaming.
1996 REGIONAL AIR POWER WORKSHOP
SUMMARY OF PROCEEDINGS

Presented by Group Captain John Harvey
Director Air Power Studies Centre
Royal Australian Air Force

The Workshop started with an overview of last year's Workshop, titled *Doctrine and Doctrine Development*. While air forces had not paid much attention to doctrine in the past, there has been increasing emphasis in this area in all regional nations and considerable development work has taken place.

Group Captain John Harvey (RAAF), Director Air Power Studies Centre, then gave a brief overview of air power education in the RAAF where there is now an extensive program in place. A major review of that program was conducted in 1995. While the review found that that program has been generally successful, several changes have been made to ensure the education process is integrated throughout an officer's or airman/airwoman's career.

Group Captain Steve Gray (RAAF), Director of Warfare Policy and Planning in Air Force Headquarters, then gave an overview of RAAF training activities as part of the overall policy of regional engagement. He pointed out that defence cooperation with regional nations is not a new activity for the RAAF; we have been doing it for a long time and it has added considerably to improving transparency among defence forces. Although the RAAF is keen to provide training opportunities for regional air forces, the demand is higher than what we can support, particularly as resources are severely constrained. He pointed out, however, that the RAAF would always try to help wherever it could.

Group Captain Terry Connolly (RAAF), Director of Operations and Air Training at Headquarters Training Command, gave an overview of pilot and navigator training within the RAAF. He also pointed out the current pressure on resources which limited the RAAF's ability to provide training support to other air forces. One of the recent successes in training has been the flight screening course conducted at Tamworth. Since the introduction of the screening process, the success rate at pilot's course has increased from approximately 50 per cent to approximately 75 per cent. An area of concern in pilot training was the concentration of effort: one school, one syllabus, one aircraft. While there has been an upward trend in output, the system was probably reaching its upper limit. As a result the RAAF has commenced an extensive review of its training system.

In terms of navigator training the key point to note was that the role was changing. What was needed were mission coordinators and systems operators. At present, the RAAF was undermanned by about 30 per cent for junior navigators. One of the problems in training more was that the same junior navigators were also required to become instructors. The problem was exacerbated by the lack of availability of training aircraft.

Captain Keith Eames (RAN), Commander Australian Naval Aviation Force, discussed RAN Air Training Development. A key point that he stressed was that maritime air operations were different from Air Force operations because the aircraft was fully integrated.
with the surface platform. He also pointed out that the aircraft were generally crewed by three, but with a single pilot. Shipborne operations also meant there were limited supervision opportunities available for junior aircrew. Because of the high workload, all crew members had to be multiskilled and required high-tech systems for support. The training system for RAN pilots consisted of initial flying training by the RAAF, basic helicopter training at the ADFHS (managed by Army) and then operational flying training (OFT) by the Navy at NAS Nowra. Observer training consisted of initial training at SAN and then OFT at Nowra.

He said that, in the near future, there would be a large expansion in the number of embarked flights. A major review was underway for both pilot and observer training - the feeling was that there was an inappropriate fixed-wing focus and there may be scope for a different approach, including commercialisation of some activities.

He also said there was considerable scope for increased use of simulators. An example was given in the tactical exercise area, where simulators cost only about two per cent of real-world exercises.

Colonel Robert Walford (Australian Army), Director of Aviation - Army, commenced his presentation by pointing out that the Army had recently taken on a range of aviation capabilities and in the last few years there had been a 40 per cent increase in the training rate. He said he saw considerable scope to improve the current pilot training system and a major review was being conducted by a consultant. There appeared to be considerable scope for an increased use of simulation, including during basic flying training where perhaps as much as 30 per cent of flying hours could be transferred to a simulator. During type conversion onto the Black Hawk, he considered as much as 50 per cent of the flying could be conducted on the simulator.

He went on to discuss the concept of ‘operational airworthiness’, which basically comprised competent people performing approved tasks, and being based on a statement of operational intent. In terms of increased regional cooperation activities, he said there was scope for cooperative use of a Chinook simulator, joint training in general and greater communication through workshops and projects.

Wing Commander Tim Owen (RAAF), No 41 Wing, discussed the role and assets of the Wing which employs some 510 people. He said the ADF Air Defence Systems Training Centre (AADSTC) had a considerable training responsibility and demand for its courses was increasing. There is a large number of current projects, including new equipment (JORN, AEW&C) and major upgrades (ground radars, communications) - the total value of which is $A4.2 billion.

At present, the training rate is double the normal rate, which has required a considerable increase in training resources. To cater for the increased requirement for operators, increased use of simulation was required. Lateral recruiting is also being used. Another method being used to increase cost effectiveness is to use commercial maintenance training where possible.

Because of the high training demand at the moment, he said there was no spare capacity for training operators from regional air forces but he considered there was the opportunity to broaden the scope of exercises.
**Group Captain John Kindler** (RAAF), Officer Commanding No 81 Wing, gave an overview of the structure and mission of No 81 Wing which consists of six squadrons and approximately 1,000 personnel. The Wing conducts a number of tactical level flying training courses, primarily the Lead-In Fighter (LIF) Course (for Hornet and F-111 pilots and F-111 navigators), the Forward Air Controller (FAC) Course, the Air Control Officer (ACO) Course and F/A-18 flying courses.

He stressed the importance of the Lead-In Fighter Course to fast jet pilot and F-111 navigator training because it results in cost savings, increases operational conversion pass rates and reduces overall training time.

Hornet courses included Operational Conversion (OPCONV), refresher training and the Fighter Combat Instructor (FIC) courses. The Hornet training was supported by a flight simulator and a range of part task trainers (PTTs). The simulator was not a full mission simulator, basically limited to systems/procedures training. While there a number of useful PTTs, there was a need to consolidate them into an overall training system.

He considered that overall the system was mature and well developed but there was still scope for improvement.

In terms of future cooperative training activities, he saw the possibility of broadening the scope of air exercises, including more multilateral exercises, and increased air-to-surface and maritime operations.

**Group Captain Geoff Shepherd** (RAAF), Officer Commanding No 82 Wing said that it was a time of great change in the Strike Reconnaissance Group. The 15 F-111G acquired had been something of a mixed blessing. The main problem was in the support area because the aircraft were only 40 per cent common with the F/RF-111C.

He said that when the F-111C aircraft first arrived, training was relatively simple because there was only one aircraft type. With the introduction of the reconnaissance modification, the avionics update project (AUP) and the G model, there were now a total of 14 aircraft variants, depending on their modification status. Part of the difficulty with training was that there was no full training package provided for the AUP aircraft. On top of the current difficulties there was also the need to integrate new weapons and possibly a stand-off imaging (SOI) capability. To accommodate this wide range of variants, he thought that a new attitude or approach to conversion-to-type was required so as to increase crewing flexibility.

He said that No 82 Wing spent considerable effort maintaining interoperability with their allies, primarily through exercises such as RIMPAC, RED FLAG and GUN RUNNER. Regional engagement was carried out through exercises such as IADS ADEXs and PITCH BLACK. One of the problems No 82 Wing was currently facing was a shortage of personnel, and Reserves were being used for TACP and headquarters positions.

**Group Captain Chris Spence** (RAAF), Officer Commanding No 86 Wing provided an overview of the Wing (C130 and B707), which, together with No 84 Wing (HS748 and Caribou), makes up Air Lift Group (ALG). Overall ALG has over 2,000 personnel and 50
to 60 aircraft. He said that No 86 Wing carried out a considerable amount of internal training, including training for regional air forces on the C130.

Apart from the usual conversion and refresher courses, No 86 Wing also conducted a range of RAAF courses concentrating on air movement and air drop, and Army courses specialising in aerial delivery of various kinds. In conjunction with AMTDU, a number of courses were conducted for regional air forces.

The introduction of the C130J to replace the C130E will involve a considerable training burden, meaning there will be no spare capacity to provide training for regional air forces. The C130J project will, however, have a full computer based training (CBT) capability, a full range of simulator capabilities (including a Level 5 Flight Simulator) and part task trainers. One of the problems is that the simulator will not be available until after the aircraft has been in service for some time.

Group Captain Rick Jones (RAAF), Commander Operational Support Group (OSG), said that OSG operated by taking personnel from a range of units spread over the entire Air Force and forming them into units for operations. A major challenge was forming them into a cohesive team. OSG does not control the training of individuals; therefore, if they are not trained prior to deployment, OSG operational readiness requirements can not be met. The major training responsibility falls on FEG commanders who are responsible for ground defence and weapon training of their personnel for deployment.

Group Captain Kerry Clarke (RAAF), Director Plans at Headquarters Air Command (HQAC), provided a perspective on training from the operational level. He provided an overview of HQAC and noted that its core business was the orchestration of forces for combat. At present there is considerable emphasis being placed on control of resources and the efficiency and effectiveness of operations.

In a time of constrained resources HQAC is putting processes in place that can provide quantitative advice on their allocation of resources, particularly in terms of exercise activity (the aim is to provide an indication of the relative merit of each the activities). All activities are being measured against the four broad defence objectives of defence of Australia, alliances, regional engagement and humanitarian support. They were careful to avoid 'slavish adherence to model efficiency' but were rather using it for 'guidance of the wise'.

Kolonel Pieter Wattimena (TNI-AU), provided an overview of air power training in the Indonesian Air Force. He pointed out that the training system was designed to provide the necessary skills and attitude. The air training system consisted of four components:

- individual training,
- unit training,
- inter-unit training, and
- joint training/combined training.

In terms of future directions, he said the current emphasis was on solving a number of current problems. One of the major training problems was associated with the low serviceability rate of training equipment. Other constraints on training were the limited
flying hours available, the growth and development of rural/urban areas, and the difficulty of finding suitable places for exercises. To improve flying training in the future, TNI-AU is seeking to learn lessons from larger air forces.

Kolonel Zakaria bin Salleh (RMAF) discussed air power training in the Royal Malaysian Air Force. He said that as the Malaysian Armed Forces have moved from focusing on counterinsurgency operations to more conventional operations and participation in UN missions. This change required new organisation, doctrine and weapons systems. These events called for changes in RMAF operational doctrine, and required a new training philosophy and methodology.

Malaysia faces no threat so its force capabilities are based on a general need for operational readiness. A key part of their training philosophy is the use of computer based training (CBT), part task trainers PTTs and full mission simulators (FMS). As well as the need for well structured and planned individual training, there was recognition of the need for exercises for single Service, joint and combined training. In the past the RMAF has had a number of exchange programs in place which they considered valuable and the programs should continue.

Group Captain Graham Lintott (RNZAF) provided an overview of air power training in the RNZAF. He discussed New Zealand’s strategic circumstances as a small isolated country, far from likely international conflict. He said New Zealand’s resources were modest and while there were no threats, the country was heavily reliant on trade and a self-reliant defence capability was required to play its part in regional stability. He recognised that self-reliance was only possible at very low levels of conflict and that at higher levels it would be required to work closely with friends and allies. It was necessary, therefore, for New Zealand to maintain interoperability through training and exercising.

He said that the RNZAF was well served by its present training system but there were two specific concerns:

- less exposure to major multilateral exercises because of the rift with the US, and
- lack of training and experience at the operational level of war - historically there has been the tendency to ‘collapse to the tactical level’.

Colonel Nelson Eslao (PAF) provided an overview of training in the Philippine Air Force. A major current issue which affects training is the PAF Modernisation Law which was signed in February 1995. The Air Force is considered as the first line of defence for the Philippines and also has a role to play in the economic development of the country. As yet, there hasn’t been significant change in the training profile but the aim is to gradually develop a capable, self-reliant air force.

The key issues facing the PAF are:

- the disparity in technology level with other regional air forces, and
- funding problems that the government faces.
A significant education and training program will be required to bridge the technology gap. When the increased capability is achieved, the PAF will be able to participate in combined cooperative defence activities.

Colonel Allan Chua (RSAF) discussed air training operations in the RSAF, which are divided between Singapore and RAAF Pearce in Western Australia. He concentrated on pilot training where the aim of the training system was to provide pilots suitable for the operational squadrons. Constraints the RSAF face in pilot training include:

- limited space - need to use overseas facilities and simulators, and
- limited manpower - need to maximise recruitment, minimise wastage, minimise overheads and shorten training time.

He said during the RSAF's 27 years of experience, pilot training has changed backwards and forwards but is now believed to be about right. The RSAF believe that simulators can be cost-effective in basic flying training and expect to conduct about ten per cent of basic training on simulators in the future. He said the RSAF also uses streaming of pilots, at present initially to fixed-wing (later to fast jet and multi-engined aircraft) and helicopters, but later to fighters, multi-engined and rotary wing aircraft.

One unique feature of their pilot training system is that they have had it accredited to ISO 9002 standard.

Group Captain Derek Promprayoon (RTAF) provided an overview of RTAF flying units and the RTAF pilot training process/organisation. In terms of pilot training:

- the primary phase is conducted on the CT4;
- the advanced phase is conducted on:
  - the PC9 for those streamed to fixed-wing, and
  - the Bell 206 for those streamed to rotary wing;
- operational training is conducted on:
  - L-39 for fighter pilots,
  - Nomad for transport pilots, and
  - Bell 206 for rotary wing pilots.

He outlined a range of training facilities, including flight simulators, an air combat manoeuvring and instrumentation (ACMI) range, and a conventional and tactical range. He also described a list of joint and combined exercises in which the RTAF participates.

Wing Commander Eric Bills (RAAF) gave an overview of the role of the ADF Warfare Centre (ADFWC) in training for air power. The ADFWC has a considerable training role as
well as its doctrine, war gaming and peace-keeping training activities. A significant part of that training involves air power, particularly joint aspects of its employment.

Round Table Discussion

At the conclusion of the formal presentations, Group Captain Harvey chaired a round table discussion on issues raised during the Workshop. Topics discussed included:

- options for the provision of more cost-effective training in times of constrained resources;
- the application of simulation, particularly during basic flying training;
- air power training at the operational level;
- retention of pilots; and
- exchange of pilots with commercial airlines.
ROUND TABLE DISCUSSION
ON COOPERATION IN THE REGION

Chaired by Wing Commander Martin Susans
Directorate of Air Force Policy - International Activities
Royal Australian Air Force

*Group Captain Clarke (RAAF):* Perhaps I could start with a general question to the group as a whole. Regionally, is the move more towards multilateral activities rather than bilateral?

*Kolonel Ansar (RMAF):* I don’t think that’s a subject that we can really address here. If it came under the FPDA arrangements, it would not be a problem but if it was non-FPDA we would need higher level policy guidance.

*Colonel Chua (RSAF):* We would need to decide what is the point of the exercise. The FPDA is a very specific agreement. If it was just a tactical exercise, there may not be a problem but we would need to look at any specific proposal in detail.

*Group Captain Clarke (RAAF):* In Australia, we are tending to move more towards multilateral activities and exercises. When we go overseas, bilateral exercises can be restrictive and not as cost effective as multilateral activities. What I am thinking of is maybe a ‘PITCH BLACK type’ activity at some central South-East Asian exercise.

*Colonel Chua (RSAF):* COPE TIGER may fit the bill. From an RSAF perspective, we don’t see multilateral or bilateral as one being better than the other. Each has its specific objectives.

*Group Captain Clarke (RAAF):* I guess what I’m asking is, for tactical level exercises, are regional countries happy with a multilateral exercise?

*Kolonel Zakaria (RMAF):* The FPDA is more tied to the political situation rather than tactical level exercises.

*Group Captain Clarke (RAAF):* I’m looking at something in the 1999 to 2000 time frame - something like a multilateral planning activity, a CPX, followed by a tactical exercise.

*Group Captain Kindler (RAAF):* What we are talking about is a non-alliance based, multilateral, flying program based tactical exercise. It would be tightly controlled and open to whoever wants to participate in it.

*Wing Commander Susans (RAAF):* The political sensitivities need to be considered. Bilateral exercises meet the military skills environment, but multilateral exercises provide wider ranging opportunities. Arguments in favour of multilateral activities would need to be pushed home in each country.
**Group Captain Kindler (RAAF):** If a multilateral activity was agreed, we could form an exercise control organisation from all our air forces to set up and run a multilateral exercise to suit.

**Wing Commander Sutherland (RAAF):** That could be a role for HQAST.

**Wing Commander Susans (RAAF):** Are there any other particular topics that people believe could be pursued at future Workshops? Could we look at things like science and technology, intelligence or logistics?

**Group Captain Clarke (RAAF):** Just a comment - One of the advantages of this forum is the fact that we get together to talk more openly at an airmen-to-airmen level, unencumbered by politics. If we broaden the scope of the Workshop too much into some of these other areas, we may lose. Political considerations and sensitivities may overtake the discussions.

**Group Captain Connolly (RAAF):** Logistics would tend to be an area where we talk bilaterally more than multilaterally.

**Group Captain Kindler (RAAF):** There would be difficulties talking about capital equipment buys and procedures, due competing priorities and national interests. You only need to look at Europe to see the sort of problems that can arise.

**Group Captain Spence (RAAF):** We already have good informal arrangements at working level to provide each other with logistic support. I know of at least one occasion where a regional country has helped us out with spares for an unserviceable aircraft.

**Wing Commander Susans (RAAF):** You can run into difficulties with logistics cooperation. Problems can arise regarding the release of information to a third country, if you are bound by another agreement.

**Wing Commander Susans (RAAF):** On the subject of regional cooperation, should we inform each other in advance of proposed or likely capabilities that we might be going to acquire?

**Group Captain Kindler (RAAF):** Cooperation on the force development process should not be just on capital equipment buys. There is scope for discussion on force development issues in a general sense but it needs careful management.

**Group Captain Clarke (RAAF):** We must recognise that there are cultural differences, regardless of all our goodwill and good intentions, and political sensitivities that will cause problems. I don’t think that we can expand too much into other areas beyond the tactical level.

**Group Captain Harvey (RAAF):** The most important thing is to talk and communicate with each other.

**Group Captain Clarke (RAAF):** That’s why something like a CPX is so much better for people-to-people interface.
Wing Commander Susans (RAAF): I think we are agreed on the need for regional cooperation, but do we do enough? Should we do more? Is it the best we can do?

Group Captain Kindler (RAAF): It’s more important that we talk, rather than set ourselves unreasonable goals.

Group Captain Shepherd (RAAF): Would this forum be better if it were hosted on a rotational basis? Then each country would have a host year, followed by a few years as just an attendee.

Group Captain Lintott (RNZAF): I don’t want to be insensitive, but I believe this forum and level of attendance is appropriate. I’m not sure if we could maintain the same level of openness and quality of input if it were to become rotational.

Kolonel Zakaria (RMAF): I agree it could become rotational in the longer term, say three to five years, but most of our countries are not ready at the moment to be able to host a Workshop like this.

Group Captain Kindler (RAAF): What about a lower level meeting, say for mission commanders and XOs at SQNLDL/FTTLT level?

Wing Commander Susans (RAAF): That’s something we could recommend to CAS.

Wing Commander Susans (RAAF): The beauty of this present forum is that all participants and all the countries involved participate on an equal basis. Flying exercises can sometimes limit contact, and some countries may feel inhibited due to a lack of capability.
CLOSURE

Presented by Group Captain John Harvey
Director Air Power Studies Centre
Royal Australian Air Force

I would like to thank everyone for participating in the Workshop, particularly those who presented papers - I know everyone is very busy but I believe the results have justified the effort.

I would also like to thank our overseas guests who have made such an effort to get here.

Thanks also to Wing Commanders Barry Sutherland and Keith Brent for their assistance but, mostly, thanks to Wing Commander Paul Hislop who has put in a large effort to organise the Workshop.

Wing Commander Keith Brent now has the task of editing the proceedings for publication as soon as possible. To that end I would encourage all those who made presentations to give a copy to Keith before you leave, if you haven’t already done so.

I will now hand over to Paul Hislop to cover any final administrative arrangements for your departure from Richmond.

Thank you.
In August 1993, the RAAF convened a milestone conference in Darwin with the dual aims of further strengthening regional ties and promoting a wider understanding of air power. Conducted under the title of the ‘Regional Air Power Workshop’, the forum included participants from senior levels of regional air forces, the ADF and the Department of Defence. It provided a forum not only for intellectual exchange, but also for improved communication on the professional and personal levels. This Workshop was an important step in encouraging further development in regional cooperation.

The 1993 Workshop focused on the way the RAAF conducts its business. The second Workshop, held in 1994, addressed both theoretical and practical issues associated with the application of air power, as well as the potential for regional cooperation activities, and each of the regional Air Forces was invited to express their views.

The third such forum, convened in Townsville in 1995, discussed air power doctrine and doctrine development. Again contributions were received from the regional countries as well as the Australian delegates.

Building on the success of these earlier forums, the 1996 Regional Air Power Workshop was conducted at RAAF Richmond, with the theme being Training for Air Power. Countries represented included Australia, Indonesia, Malaysia, New Zealand, The Philippines, Singapore and Thailand. Papers were presented by representatives from all participating countries.

This publication is an account of the proceedings of the 1996 Regional Air Power Workshop. It is intended as a record for participants, as a basis for similar future forums and, more generally, as a contribution towards greater regional defence cooperation.