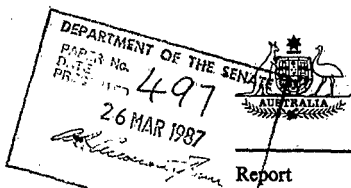


# Response to Review of Defence Project Management Report



Report

# 267

Joint Committee of  
Public Accounts



THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA  
JOINT COMMITTEE OF PUBLIC ACCOUNTS

267TH REPORT

RESPONSE TO  
REVIEW OF DEFENCE PROJECT MANAGEMENT REPORT

(DEPARTMENT OF FINANCE MINUTE ON THE COMMITTEE'S 243TH REPORT)

Australian Government Publishing Service  
CANBERRA 1987

JOINT COMMITTEE OF PUBLIC ACCOUNTS

FIFTEENTH COMMITTEE

R E TICKNER, MP (Chairman)

SENATOR J O W WATSON (Vice-Chairman)

SENATOR B COONEY	B J CONQUEST, MP
SENATOR P J GILES	A J DOWNER, MP
SENATOR THE HON DAME MARGARET GUILFOXLE, DBE	R J KELLY, MP
SENATOR G MAGUIRE	H MAYER, MP
	J G MOUNTFORD, MP *
	G B NEHL, MP
	L R S PRICE, MP
	P M RUDDOCK, MP
	DR A C THEOPHANOUS, MP
	DR D J H WATSON, MP

SECTIONAL COMMITTEE ON DEFENCE PROJECT MANAGEMENT

H MAYER, MP (Chair)

SENATOR B COONEY	G B NEHL, MP
SENATOR G MAGUIRE	P M RUDDOCK, MP

\*Ex-officio member being Chairman,  
House of Representatives Standing Committee  
on Expenditure

(c) Commonwealth of Australia 1987

#### DUTIES OF THE COMMITTEE

Section 8.(1) of the Public Accounts Committee Act 1951 reads as follows:

Subject to sub-section (2), the duties of the Committee are:

- (a) to examine the accounts of the receipts and expenditure of the Commonwealth including the financial statements transmitted to the Auditor-General under sub-section (4) of section 50 of the Audit Act 1901;
- (aa) to examine the financial affairs of authorities of the Commonwealth to which this Act applies and of intergovernmental bodies to which this Act applies;
- (ab) to examine all reports of the Auditor-General (including reports of the results of efficiency audits) copies of which have been laid before the Houses of the Parliament;
- (b) to report to both Houses of the Parliament, with such comment as it thinks fit, any items or matters in those accounts, statements and reports, or any circumstances connected with them, to which the Committee is of the opinion that the attention of the Parliament should be directed;
- (c) to report to both Houses of the Parliament any alteration which the Committee thinks desirable in the form of the public accounts or in the method of keeping them, or in the mode of receipt, control, issue or payment of public moneys; and
- (d) to inquire into any question in connexion with the public accounts which is referred to it by either House of the Parliament, and to report to that House upon that question,

and include such other duties as are assigned to the Committee by Joint Standing Orders approved by both Houses of the Parliament.

#### PREFACE

This report presents the response of the Department of Defence and other relevant departments to Report 243 - Review of Defence Project Management together with the Committee's comments on the response.

Since 1952 formal procedures have been in operation to ensure that appropriate action is taken in response to each of the Committee's reports.<sup>1</sup> These procedures involve the preparation of a response, known as a Department of Finance Minute, as follows:

1. The Committee's report is tabled in the Senate and the House of Representatives.
2. The Committee's Chairman then forwards a copy of the report to the responsible Minister and to the Minister for Finance with a request that the report be considered and the Chairman subsequently informed of action taken and planned to address the Committee's recommendations.
3. The reply, in the form of a Department of Finance Minute is then examined by the Committee and submitted with comment as soon as possible as a report to the Parliament.

This Finance Minute was received in September 1986, seven months after the tabling of Report 243. At the time the Committee was engaged in its follow-on inquiry into Aspects of Defence Equipment Support. Volume One of the report of that inquiry (Report 263) was tabled in November 1986. A number of issues raised in Report 243 have been considered further in Report 263.

The Committee welcomes this response. Fifty of the 68 recommendations in Report 243 have been accepted. However, the Committee is concerned that a number of important recommendations relating to the scrutiny of major defence equipment proposals, contracting matters, the selection of senior project management personnel and reporting to Parliament on the defence capital equipment program have been not accepted or only partially accepted. The Committee finds the reasons advanced for the rejection or qualified acceptance of recommendations unsatisfactory. It strongly urges that the recommendations be re-considered.

---

1. Formal responses to the Committee's Reports are not prepared in the case of discussion papers, handbooks and the Committee's annual report.

TABLE OF CONTENTS

CHAPTER	PAGE
Preface	v
Table of Contents	vii
Appendices	viii
Abbreviations	ix
1 Committee Comment on the Government's Response to the 243rd Report	
. Introduction	1
. Observations of the Minister for Defence	2
. Scrutiny of Equipment Requirements and Acquisition Proposals	4
. Contracting Issues	5
. Personnel Management Aspects	7
. Accountability	8
. Clarification of Information	8
. The Basic Pilot Trainer Aircraft Project	11
2 Summary of the Committee's 243rd Report	12
3 Department of Finance Minute on the 243rd Report	17
. Finance Minute Appendix A	42
. Finance Minute Appendix B	45

The Committee does not agree with the inference the Minister and the Department have drawn from a number of its recommendations (specifically Recommendations 56 and 66) that the Committee was proposing to adopt an executive role in the management of the Department of Defence. Reading Report 243 indicates that this is not the case. The Committee refers the Department to the evidence it gave the Committee and the Committee's Act, specifically section 8 (duties of the Committee), section 10 (power to take evidence) and section 18 (false evidence).

The Committee is seeking progress reports on two measures taken by the Department, namely on action taken to reduce the unacceptably long civilian recruitment lead times in the Department (Recommendation 56) and on the results of the Department's proposed investigation of the feasibility of introducing a comprehensive resource costing system (Recommendation 66). A comprehensive costing system, the Committee believes, should allow the costs of Departmental management resources to be allocated to individual projects and help minimise time-consuming management procedures. The Committee awaits the Defence response to these important recommendations.

In its comments on the Finance Minute the Committee has clarified a number of recommendations at the request of the Department of Defence and the Australian Audit Office.

Because of the importance of the issues raised, the Committee intends to maintain its interest in Defence project management.

For and on behalf of the Committee,

R E Tickner, MP  
Chairman

M J Talberg  
Secretary  
Joint Parliamentary Committee of Public Accounts  
Parliament House  
Canberra ACT  
25 February 1987

## APPENDICES

	PAGE
A Representation from Millicer Aircraft Pty Ltd on the RAAF Basic Pilot Trainer Aircraft Project, dated 30 June 1986	48
B Committee's letter to the Department of Defence requesting responses to questions raised by Millicer Aircraft's representations, dated 30 July 1986	132
C Department of Defence response to the Committee's questions on Millicer Aircraft's representations, dated 25 August 1986	135

## ABBREVIATIONS

AAC	- Australian Aircraft Consortium
ADFA	- Australian Defence Force Academy
ADP	- Automatic Data Processing
AFP	- Australian Frigate Project
AIP	- Australian Industry Participation (Program)
BPTA	- Basic Pilot Trainer Aircraft (Project)
CAC	- Commonwealth Aircraft Corporation
CAFM	- Chief of Air Force Materiel
CAM/CMAT-A	- Chief of Army Materiel
CAFO	- Contract Acceptance and Purchase Order
CCP	- Chief of Capital Procurement
CDP	- Chief of Defence Force
CMF	- Configuration Management Plan
CNM	- Chief of Navy Materiel
CPM	- Critical Path Monitoring
CPO	- Capital Procurement Organisation
CS <sup>2</sup>	- Cost Schedule Control System
DDS	- Department of Defence Support
DFDC	- Defence Force Development Committee
DHC	- Department of Housing and Construction
DOD	- Department of Defence
DORC	- Defence Operational Requirements Committee
DSARC	- (US) Defence Systems Acquisition Review Council
DSDC	- Defence Source Definition Committee
DSTO	- Defence Science and Technology Organisation
EAS	- Equipment Acquisition Strategy
ECP	- Engineering Change Proposal
EDE	- (Army) Engineering Development Establishment
FASDIMP	- First Assistant Secretary Defence Industry and Materiel Policy
FASFDA	- First Assistant Secretary Force Development and Analysis
FASFIN	- First Assistant Secretary Financial Services and Internal Audit
FASPB	- First Assistant Secretary Programmes and Budgets
FMS	- Foreign Military Sales (United States)
FSC	- Force Structure Committee
FYDP	- Five Year Defence Program
GAF	- Government Aircraft Factories
GFE	- Government Furnished Equipment
GFI	- Government Furnished Information
GOSIEAA	- (Navy) General Overseer Survey and Inspections East Australia Area

HDH - Hawker de Havilland  
 IDC - Inter-departmental Committee  
 ILS - Integrated Logistic Support  
 LMP - Logistics Management Plan  
 LOA - Letter of Offer and Acceptance (FMS)  
 MEP - Major Equipment Proposal  
 MOA - Memorandum of Arrangements  
 MOU - Memorandum of Understanding  
 ODP - Office of Defence Production  
 PARCBS - (Navy) Production Authority Representative  
           Contract Built Ships  
 PD - Project Director  
 PERT - Program Evaluation and Review Technique  
 PMAP - Project Management and Acquisition Plan  
 QA - Quality Assurance  
 QC - Quality Control  
 RAAF - Royal Australian Air Force  
 RAN - Royal Australian Navy  
 RFT - Request for Tender  
 TADS - Tactical Air Defence System  
 USN - United States Navy  
 WND - Williamstown Naval Dockyard

CHAPTER 1

COMMITTEE COMMENT ON THE GOVERNMENT'S

RESPONSE TO THE 243RD REPORT

- . Introduction
- . Observations of the Minister for Defence
- . Scrutiny of Equipment Requirements and Acquisition Proposals
- . Contracting Issues
- . Personnel Management Aspects
- . Accountability
- . Clarification of Information
- . The Basic Pilot Trainer Aircraft Project

Introduction

1.1 This chapter comments on the Department of Finance Minute (refer Chapter 3) responding to the Committee's 243rd Report. The Department of Finance Minute was received by the Committee on 23 September 1986.

1.2 Overall, the Committee is pleased with the acceptance of the bulk of its recommendations although it notes with some concern that 18 of the 50 accepted recommendations have been accepted on an in principle basis only. Although Report 243 was highly critical of Departmental management procedures and practices the Committee's criticisms were intended to be constructive. The Finance Minute has generally responded positively to the Committee's criticisms.

1.3 The Finance Minute details the Government's acceptance of 50 of the Committee's 68 recommendations. Seven recommendations were partially accepted and nine not accepted. One recommendation is still being considered (Recommendation 65). Of the nine recommendations not accepted, three (Recommendations 56, 66 and 68) were referred back to the Committee for clarification and re-submission.

1.4 The Committee is very disappointed with the rejection or partial acceptance of a number of important recommendations, in particular the responses to its recommendations relating to:

- . the internal scrutiny of major equipment proposals;
- . contracting matters;

- the recruitment and retention of project management personnel; and
- reports to Parliament on the major defence equipment program.

1.5 The Committee is surprised at the interpretation placed on Recommendations 56, 66 and 68. The Committee has clarified its position on these recommendations herein and looks forward to a considered response to the substance of these recommendations.

1.6 The Committee also expects, in due course, a response from the Department of Finance to Recommendation 65 concerning that Department's review of the methods used by the Department of Defence to monitor changes in project costs.

1.7 The Committee notes the areas of misunderstanding in the Report suggested by the Department of Defence and the Attorney-General's Department. Their submission identified two errors in Report 243. However, these errors are not material to the Committee's findings or recommendations. The Committee rejects the inference of the submission that the Report contained misleading information and the suggestion that there were other, less substantial areas of misunderstanding in the Report. The Committee believes that the Department of Defence should examine more closely the evidence it gave the Committee. Each of the matters raised in the submission (refer Appendix A of Finance Minute, Chapter 3) is addressed in the final sections of this Chapter.

#### Observations of the Minister for Defence

1.8 In a letter to the Minister for Finance accompanying the Departmental Response the Minister for Defence commented that:

1. many of the recommendations have been adopted in one form or another under the Department's organisational arrangements for the Capital Procurement Organisation and the Defence Purchasing Organisation;
2. a number of recommendations would require substantial changes to the existing organisation of the Department but because the current arrangements for capital procurement and purchasing have only been in place a relatively short time now was not the time to vary the arrangements; and
3. in some of its recommendations the Committee was proposing a role in the executive management of the Department in that it asked the Department to report direct to it on a number of issues.

1.9 The Committee is pleased to note that a large number of its recommendations have been adopted or have become standard practice during the course of the inquiry.

1.10 However the Committee is disappointed that a number of its recommendations, particularly those bearing on the Departmental scrutiny of equipment acquisition proposals, have been not accepted or partially accepted. In drafting these recommendations the Committee took into account the need for the new organisational arrangements for capital procurement to settle and to be judged in the light of their performance. The Committee believes that the centralisation of capital procurement functions, the simplification of project organisational arrangements and the delegation of greater authority to project directors envisaged by the Department of Defence when it established the Capital Procurement Organisation needs to be pursued more thoroughly than was evident in the announced arrangements for the Capital Procurement Organisation.

1.11 It is especially important that the initial definition and planning stages of projects are adequately managed. This requires assigning the Capital Procurement Organisation (CPO) greater control over the initial phases of the development of projects and clarifying the delineation of responsibilities between the CPO and the Service sponsor. In the past there had been a tendency for Service sponsors and functional areas of the Department to maintain undue control over the technical aspects of projects with substantial detriment to project costs and schedules.

1.12 The Committee hopes to review the performance of the Capital Procurement Organisation at a later date. A number of current major projects such as the New Submarines project may provide good case studies.

1.13 The Committee does not agree with the inference the Minister and the Department have drawn from a number of its recommendations (specifically Recommendations 56 and 66) that the Committee was proposing to adopt an executive role in the management of the Department of Defence. Reading the Report indicates that this is emphatically not the case. The Committee refers the Department to the evidence it gave the Committee and the Committee's Act, specifically section 8 (duties of the Committee), section 10 (power to take evidence) and section 18 (false evidence). The Committee is seeking progress reports on two measures taken by the Department, namely on action taken to reduce the unacceptably long civilian recruitment lead times in the Department (Recommendation 56) and on the results of the Department's proposed investigation of the feasibility of introducing a comprehensive resource costing system (Recommendation 66). A comprehensive costing system, the Committee believes, should allow the costs of Departmental management resources to be allocated to individual projects and help minimise time-consuming management procedures. The Committee awaits the Defence response to these important recommendations.



## Scrutiny of Equipment Requirements and Acquisition Proposals

1.14 In Recommendations 2 to 8 the Committee proposed a number of changes to Departmental organisational arrangements and decision-making procedures and processes to:

- increase the control of the CPO over the initial phases of the development of projects;
- improve the quality of information available to decision-makers especially that allowing a fuller consideration of cost saving options; and
- improve the documentation of project decisions.

1.15 The Department has not accepted Recommendation 2, that Staff Targets submitted to the Defence Operational Requirements Committee (DORC) incorporate preliminary cost estimates of proposals based on whole of life costs, and Recommendation 7, that the endorsed Staff Target be reviewed in the light of project definition studies before endorsement as a Staff Requirement. Recommendation 3, that the quality of project feasibility studies be monitored by the Defence Central Studies Unit, and Recommendation 4(a), that sole responsibility for advancing a project from acceptance into the Five Year Defence Program (FYDP) to project approval be transferred from the Service sponsor to the CPO, were only partially accepted. The Department considered that these changes were either not necessary or inappropriate as:

- the Major Equipment Proposal considered by the Defence Force Structure Committee was the more appropriate document for cost estimates (the main purpose of the Staff Target was to initiate technical feasibility studies);
- the Staff Requirement was in effect the Staff Target reviewed as the result of studies and analysis;
- the Central Studies Unit had limited resources and other responsibilities; and
- placing sole responsibility for progress of a project through the FYDP on the CPO would put undue emphasis on procurement aspects at the expense of force development and force structure aspects.

1.16 The Committee finds these responses unsatisfactory. The recommendations flow from the Committee's findings that:

- there was inadequate evaluation of whole of life costs, cost effectiveness and technical risks at the stage where basic equipment options were considered, ie the scrutiny of the Staff Target;
- these studies when undertaken were not always satisfactory;
- the separate consideration of military requirements by the DORC and resource programming by the FSC carried with it the danger that the availability of funds would dictate the final equipment decision; and
- if the CPO does not take responsibility for a project throughout the procurement process it is difficult to see who will take that responsibility, CPO emphasis on procurement is a function of its organisation and should not be at the expense of force development and force structure.

1.17 The Committee believes that all options including non-equipment options should be considered at the project feasibility stage and that that consideration should address economic and technical issues. Technical proposals should not be advanced in isolation from economic or resource considerations. The Committee believes that its recommendations, taken as a whole, would not lead to 'undue emphasis on procurement aspects'. Recommendations 2 to 8 need to read in association with Recommendations 47 to 52 which were designed to give the CPO responsibility for managing the project definition stage on behalf of Service sponsors under arrangements which would safeguard the interests of sponsors but at the same time provide for:

- the better management of project definition studies than had existed in the past; and
- the conservation of scarce project evaluation resources.

1.18 Inadequate project definition had been responsible for much of the lack of success in a number of projects examined by the Committee.

## Contracting Issues

1.19 The Committee made a number of recommendations aimed at achieving a better protection of the Commonwealth's interests in Defence contracts (Recommendations 22 to 29).

1.20 The Department of Defence did not accept three of these recommendations, that:

- current excusable delay provisions be revised to precisely specify the events for which claims can be made and the period for consultation to resolve claims (Recommendation 27);
- wherever possible, use be made of commercial contracts rather than Foreign Military Sales arrangements for US-sourced equipment (Recommendation 29); and
- a quality management program be commenced to ensure that all local suppliers of items of major equipment comply with Australian Standard AS 1822 by the end of 1987 (Recommendation 35).

1.21 Defence argued that:

- it was impracticable to list all conceivable events which might cause contract delay and that the current standard excusable delay clause was effective and flexible;
- US Foreign Military Sales arrangements were in some instances the most economical and effective purchasing arrangement and the most appropriate purchasing arrangement was considered as a matter of course for each project; and
- complete insistence on compliance with Australian Standard 1822 may in some areas involve unjustifiable costs.

1.22 The Committee finds these responses unsatisfactory.

1.23 Although the Committee was encouraged that the new pro-forma contract provided a more effective excusable delay clause it was concerned that the Department had misunderstood the recommendation. The Committee was not asking the Department to prognosticate but to address the classes of events likely to result in delay claims in future contracts to avoid the contracting difficulties which befell, for example, the HMAS Success project.

1.24 The Committee agrees that Foreign Military Sales may in some circumstances be the most economical and effective purchasing arrangement. However, it believes the present levels of use are too high and should be reviewed. The Committee was recommending the establishment of a general principle here regarding commercial contracts. The Department has not addressed this general principle in its response - rather it has only discussed the desirability of US FMS arrangements 'in some instances'.

1.25 The Committee is particularly concerned with the Defence response on the application of quality assurance standards. The Committee is aware of the Department's concern about the quality performance of many local suppliers, only a fraction of whom had quality control systems registered as meeting Australian Standards. Poor supplier quality performance imposed considerable costs on some of the projects reviewed by the Committee. The Department has misunderstood the Committee's recommendation. The Committee recommended the Department use commercial specifications and not military specifications as the latter are often more difficult and expensive.

#### Personnel Management Aspects

1.26 The Committee made a number of recommendations with the object of improving the quality of project management personnel (Recommendations 53 to 63). In particular, the Committee proposed that selection criteria for senior Defence project management personnel stipulate prior project management experience and training (Recommendations 53 and 54).

1.27 The Finance Minute response only partially accepted these recommendations. Although experience and training in project management are important, senior personnel should continue to be selected in accordance with the requirements of the individual project. The Public Service Board was concerned that adoption of Recommendation 54 could result in a narrow approach to the selection of senior project management staff. The requirement for experience and training in project management could cause selection committees to overlook talented people from other backgrounds who have the skills and abilities to undertake project management work.

1.28 The Committee finds the Public Service Board response unsatisfactory. The Board's response appeared to have been drafted with little understanding of the Committee's Report. The Committee's Report and minutes of evidence demonstrate that project management in Defence and other organisations requires special skills not required in general management situations. According to all authorities on the subject known to the Committee, these skills can only be developed on the job and by appropriate training. The Board's concern that the adoption of the recommendation could lead to a narrow approach to staff selection is surprising in view of the emphasis the Committee gave to increasing the use of project management skills from outside Defence and the public sector (refer Recommendations 20 and 55).

1.29 The limited experience and training of Defence project management personnel and the lack of career paths to retain skilled project management personnel were matters of considerable concern to the Committee. The Board's apparent lack of appreciation of the needs of project management in the Commonwealth sector was also evident in its equivocal response to Recommendation 61, that it consult with Defence and other relevant Commonwealth agencies to develop a Service-wide career path for civilian project management personnel. The Committee

believes that the implementation of these and other recommendations would greatly assist the development of needed project management skills in Australian industry generally.

#### Accountability

1.30 The Committee recommended that the Department of Defence submit a detailed annual report to Parliament on its major capital equipment program (Recommendation 67). The Department did not accept this recommendation arguing that the matters the Committee wished reported are dealt with already in the Appropriation Bills and supporting documents and that the preparation of such reports would be costly.

1.31 The Committee is most dissatisfied with this Defence response. It fully concurs with the accompanying comment of the Department of Finance that the Appropriation Bill and supporting documents, taken together, do not provide the information the Committee sought to have presented to Parliament in the terms indicated at Recommendation 67(a), (c) and (d) and that information of the type outlined in Recommendation 67 should be of significant assistance to all those involved in the scrutiny of progress and costs of major defence capital acquisitions. The Committee considers that the Department of Finance should pursue this matter vigorously with the Department of Defence.

1.32 In Recommendation 68 the Committee proposed that the annual reports on the Defence major capital equipment program be referred to the Auditor-General for investigation and report should the project costs escalate by more than fifteen per cent per annum. The Australian Audit Office in a comment appended to the Finance Minute (Appendix B Chapter 3) questioned whether the Committee had intended that the recommendation constitute a direction by the Government to the Auditor-General. Although the Audit Act allowed for such direction, the Audit Office believed that a mandatory requirement to review all Defence projects which experienced cost escalation above a specified rate would severely constrain Audit resources and be unnecessarily restrictive of Audit investigation.

1.33 The Committee accepts the Audit Office response and concurs with the Audit Office suggestion that Recommendation 68 be re-drafted to read:

'The reports be referred to the Auditor-General for consideration and subsequent investigation and report on any projects where he may deem it appropriate to do so.'

#### Clarification of Information

1.34 In an appendix to the Finance Minute (Appendix A, Chapter 3) the Department of Defence and the Attorney-General's Department set out what they perceived to be some areas of misleading information contained in the Report. Four areas were addressed:

(a) cost over-runs;

(b) contracting issues;

(c) the P3C Project; and

(d) the role of the Force Structure Committee.

#### (a) Cost Over-runs

1.35 Defence considered that the Report provided misleading information on the extent of cost over-runs on the FFG Guided Missile Frigate and the HMAS Success projects.

1.36 Figure 2.2 (Volume 1, page 15 of Report 234) portrayed a real cost over-run on the FFG project of 177.3 per cent. However, it was misleading to compare the opening cost estimate of the project with the final cost because of the significant variations to the project over its life, in particular the acquisition of a further two ships, the revision of the capability requirements for the ships' helicopters and subsequent developments in anti-ship missiles.

1.37 The summary of the history of the HMAS Success project at page 69 of Volume 2 of the Report unfairly compared the initial cost of the ship only (\$68 million) with the final cost of the ship plus associated support (\$197.7 million). The expected final ship only price was \$95 million.

1.38 The Committee accepts the need to qualify comparisons of initial and final project costs with reference to changes in the project. The comparison of an initial ship only cost with a final total project cost in the case of the HMAS Success project is regretted. The final project cost of \$197.4 million should have been compared with the initial approved total project cost of \$73.2 million (see page 2828 of the Minutes of Evidence). However, the Committee rejects the charge of providing misleading information in relation to the FFG project. Figure 2.2 simply reproduced information provided by the Department in response to the Committee's specific request for details of real and nominal cost over-runs on the sixteen projects examined by the Committee. Diagram 2.2 and the Committee's subsequent discussion of the FFG project (see Volume 2, paragraphs 2.13 to 2.15) fully acknowledged the changes that occurred to the FFG project.

1.39 The Department of Defence should study the Minutes of Evidence to ascertain whether the evidence they provided the Committee was adequate.

#### (b) Contracting Issues

1.40 The Attorney-General's Department objected to the Committee's findings that a lack of firm contractual penalties and incentives reflected, among other things, the lack of contracting expertise within the Attorney-General's Department. The finding is highly questionable since it was based on the evidence of a 1971 review and ignored subsequent developments in the Department.

1.41 The Committee notes the closer liaison between Attorney-General's and Defence personnel on procurement matters since 1973 and the stronger organisational support within Attorney-General's for defence procurement. However, the concern expressed in the Report about a lack of expertise in United States procurement laws was not entirely allayed by Attorney-General's advice that in recent times an officer of the Department has completed studies in US procurement laws.

(c) P3C Project

1.42 The Department of Defence pointed out that the summary of the history of the Additional PC3 Orion Aircraft project at paragraph 7.3 of Volume 2 of the Report incorrectly stated that the refurbishment of the existing P3B aircraft would have resulted in potential cost savings of \$82 million compared with the option of procuring new P3C aircraft. The evidence given to the Committee was that a potential saving of \$82 million would flow over 12 years from the purchase of new P3Cs versus refurbishment of the P3Bs.

1.43 The Committee accepts that the Report is in error on this point. The mistake, which the Committee regrets, appears to have been the result of an error in interpretation of evidence. The relevant evidence, which was provided by the Chief of Air Force Materiel, Air Vice-Marshal Alan Heggen is reproduced below:

Mr KENT - On the basis of the final contract price of \$US269m, what are the expected savings of the P3C acquisition over a P3B modernisation?

Air Vice-Marshal Heggen - The P3B modernisation was originally perceived as the way in which we would upgrade the P3 force. That project to update the P3B was costed at \$158m in 1981. Compared with the cost of purchasing 10 new P3Cs, it was estimated that over a 12-year period - which was assessed as the remaining service life of the aircraft - there would be a saving all up of some \$82m. That saving was in terms of the cost of maintaining the existing onboard equipments which were obsolescent, the costs of the necessary major maintenance that would be required on the P3Bs, and various other support costs associated with maintaining dissimilar aircraft within a fleet. That saving of \$82m estimated at the time was against an estimate for the P3C acquisition of \$236m. As the ultimate contract price for the P3Cs was \$296m, giving a total project cost of \$A362m, then the saving and support cost is still available in that the penalties of maintaining a dissimilar fleet and the work required on the P3Bs would still have been required and we retained those aircraft. So, on the one hand we are saving by trading-in the B models but we are in fact

paying a higher price for the P3C. It could be argued that that saving has been eroded. On the other hand, we are acquiring an aircraft with at least 20 years of service life. So it may not be strictly valid to compare that perceived saving with the cost that we are ultimately paying for the P3C. [Minutes of Evidence, pages 717-719]

1.44 The Committee would still like to know what was the projected cost saving on a P3C acquisition over a P3B refurbishment on the basis of the final contract price for the aircraft of \$269 million.

(d) Role of the Force Structure Committee

1.45 The Department of Defence claimed that the Committee identified only the programming role of the Force Structure Committee (FSC) when it noted that the FSC assigned financial priority to proposals in the light of the Government's forward financial guidance. The FSC has a broader function, which was outlined in evidence to the Committee, to independently analyse, review and assess Service equipment proposals.

1.46 The Committee disagrees that it identified only the financial programming role of the FSC. Rather, the Committee in its discussion of financial programming issues emphasised the fact that the FSC has a largely programming role (see Volume 1 of the Report, paragraphs 5.2 to 5.7). Indeed, the Utz Review of the Higher Defence Organisation suggested that the FSC be renamed the Major Proposals Programming Committee (see paragraphs 5.126 to 5.142 of the Utz Report). The Committee is puzzled therefore why the Department chose to object to the Committee's description of the operations of the FSC.

The Basic Pilot Trainer Aircraft Project

1.47 Since tabling Report 243 the Committee has received detailed representations from Millicer Aircraft Pty Ltd regarding the Basic Pilot Trainer Aircraft Project which questioned evidence given to the Committee during the inquiry. The Committee submitted Millicer Aircraft's representations to the Department of Defence with a number of questions for their response. This material and the Defence response has been included in Appendices A, B and C herein.

1.48 The Committee believes that the Defence response allays its concerns about the accuracy of evidence given during the inquiry. However, the material contained in Millicer Aircraft's representations and in the Defence response confirms the Committee's findings regarding this unhappy project.

## CHAPTER 2

### SUMMARY OF THE COMMITTEE'S 243RD REPORT

2.1 Tabled on 20 February 1986, Report 243 presented the findings of the Committee's inquiry into the Department of Defence's management of its major capital equipment acquisitions.

2.2 The Report was presented in two volumes. The first comprised the main report and contained the Committee's findings, recommendations and supporting arguments. The second volume contained analyses of sixteen current or recent Defence projects examined in detail by the Committee.

2.3 Several other reviews laid the groundwork for the Committee's inquiry. For example, the Utz Report on the Higher Defence Organisation noted 'a history of criticism and complaint surrounding Defence procurement'. In an examination of ten major Defence projects, the Auditor-General found that 'Defence project management practices were unsatisfactory contributing to:

- . significant additional costs to the Commonwealth;
- . the need for scarce resources to be engaged in rectifying project problems; and
- . a diminution of the Defence capability through untimely delivery of equipment and facilities and through equipment and facilities not meeting technical performance objectives'.

2.4 The Committee sought to identify changes in Defence organisational arrangements, decision making processes and management systems which would improve the efficiency, effectiveness and accountability of Defence project management.

2.5 The inquiry encompassed the full range of activities associated with the acquisition of Defence equipment, from the conception of a need to the introduction of a specific brand item of equipment into service. The Committee drew most of its evidence from a detailed examination of the history of sixteen major equipment projects.

2.6 It found that of the sixteen, eleven failed or threatened to fail to be completed on time, to budget or to technical requirements. A multiplicity of factors contributed to this unsatisfactory record. Many were factors over which the Department had little control, in the short-term at least, for example:

- . the inexperience of Australian industry;

- . budgetary restraints and the effects of other government decisions;
- . international economic conditions; and
- . the actions of foreign governments, especially the United States.

2.7 Notwithstanding these influences, the Committee found that inefficient and ineffective Defence project management was directly responsible for most of those poor results. In a number of instances, better Departmental management could also have ameliorated the adverse effects of some of the external factors mentioned.

2.8 In the sixteen projects the most common project management shortcomings were:

- . inadequate evaluation of project proposals;
- . under-estimates of project costs, time scales and risks;
- . incomplete project planning;
- . inadequate evaluation of tenders;
- . contracts which did not specify all contract requirements or provide effective incentives for contractors to minimise cost or perform to schedule;
- . inadequate monitoring of contractor performance;
- . contract supervision which did not submit the (sometimes) large number of contract changes to sufficient scrutiny to preserve project budgets and schedules; and
- . generally slow Departmental decision making processes.

2.9 The Committee examined Defence organisational arrangements, project resources, management information systems and decision making procedures to ascertain what lay behind these observed shortcomings. It found several serious structural deficiencies in the Department's approach to project management including:

- . a dispersal of project management responsibilities and authority;

- inadequate project management resources, especially in numbers of staff and computer support;
- a shortage of experienced project managers;
- limited training in project management at all levels;
- low retention of project knowledge due to a high staff turnover; and
- inadequate management information systems within project offices and throughout the Department.

2.10 The Committee was encouraged to find, however, that there was increasing agreement within the Department as to these deficiencies and that significant steps had been taken towards rectifying them.

2.11 To overcome the dispersal of project responsibilities and simplify project organisational arrangements the major Defence procurement functions had been centralised in a new Capital Procurement Organisation. Over the time frame of the Committee's Inquiry (from the late 1970s to the mid 1980s) there had been a gradual increase in the authority assigned to project directors and in the level of resources allocated to project management.

2.12 The Committee was unhappy, however, about the adequacy of specific reforms and about the apparent priority assigned by senior management to improving Defence project management.

2.13 The Capital Procurement Organisation initiative seemed to represent only a formal change in top management structure that left unchanged the underlying Service ways of doing things. The Committee believed that the procurement function should be given independence from the Services. In the past there had been a tendency for the Service sponsors or functional areas to maintain undue control, particularly over the technical aspects of projects. As a result large numbers of specification changes have been made with adverse effects on project costs and schedules.

2.14 Most project directors still did not have authority commensurate with their enhanced responsibilities. In addition to their limited control over technical aspects, project directors had insufficient control over project administrative resources. The measures made no explicit reference to training and other critical personnel management issues. Current planning envisaged only a limited and gradual upgrading of computer support for project management. It was with these concerns in mind that the Committee framed its recommendations.

2.15 To improve the effectiveness of Defence project management the Committee recommended:

- firmly delineating the different responsibilities of the Capital Procurement Organisation and the Service sponsor or client organisation;
- assigning the procurement function more autonomy by giving the Capital Procurement Organisation increased authority and control;
- delegating more authority to project directors, especially over technical and administrative aspects;
- increasing the level of staffing and computer support given to project offices;
- making greater use of project management expertise outside Defence, especially that in the private sector;
- implementing proposed improvements in Defence project management information systems; and
- improving the quality of Defence contracting and contract administration.

2.16 Some of these measures will improve also the efficiency of Defence project management by shortening decision chains and increasing productivity. The Committee believed there was considerable scope for improving further the efficiency of Defence project management by:

- modifying Departmental procurement approval procedures to
  - speed decision-making, and
  - improve the quality of information available to decision-makers
    - to allow a fuller consideration of cost-saving options, and
    - to avoid costly changes after contracts have been let;
- increasing the level of project management skills within Defence by
  - giving greater emphasis to project management experience in selecting key project personnel, and

- expanding project management training at all levels;
- increasing the retention of project management skills by developing career paths in project management and related areas;
- consolidating Defence project management procedures and practices;
- providing stronger contractual incentives for suppliers to meet requirements on time and to cost; and
- reducing the potential for post-contract delays by simplifying procedures governing
  - design approvals,
  - contract changes, and
  - contract disputes.

CHAPTER 3

DEPARTMENT OF FINANCE MINUTE

3.1 This Minute has been prepared on the basis of responses received from the Department of Defence, the Public Service Board, the Auditor-General and the Department of Finance.

3.2 The written responses are as indicated below. However, in addition to those replies, the Minister for Defence made the following supplementary observations in his letter, dated 30 July 1986, to the Minister for Finance:

- (a) My Department has prepared a statement which takes the form of a general overview, point by point comments on each of the 68 specific recommendations, and a paper to clarify some of the misunderstandings contained in the Report - Appendix A.
- (b) I have no difficulties with the position taken in the papers and commend them to you and the Chairman, JPCPA as a comprehensive and appropriate response by my Department to the work of the Committee.
- (c) I would also like to take this opportunity to comment on some of the broad issues that have arisen from the report.
- (d) Many of the recommendations have been adopted in one form or another under the Department's organisational arrangements for the Capital Procurement Organisation and the Defence Purchasing Organisation. Others are being progressively introduced in the new management system, to which the CPO and DPO are giving high priority.
- (e) A number of recommendations, if implemented as they stand, would require further substantial changes to the existing organisation of my Department including aspects of force structure development and planning, use of external agencies or the relocation of existing Defence resources. To the extent that re-allocation of existing resources was required, the consequences would need to be weighed up carefully to avoid harmful cuts elsewhere, and I argue that it would be very difficult to assess such consequences when current arrangements for capital procurement and purchasing have only been in place a relatively short time.

- (f) In short, I believe now is not the time to vary them substantially in the way the Committee proposes, and it may never be necessary, depending upon Departmental performance in the future.
- (g) In some of its recommendations the Committee is proposing a role in the executive management of my Department, in that it asks the Department to report direct to it on a number of issues.
- (h) I cannot, of course, agree to such a proposal and question whether in fact that such an approach was really intended by the Committee. Once I am clear on the Committee's position in this regard, I certainly would be prepared to consider further the substance of their recommendation of this type.

**RECOMMENDATION 1**

Where major disagreements within Defence Committees impede procurement action, the Secretary of the Department of Defence report to the Minister on the nature of the disagreement and the alternative courses of action.

**Response**

This arrangement is already in place. Implications of major delays are reported to the Minister as a matter of course.

**RECOMMENDATION 2**

Staff Targets submitted to Defence Operational Requirements Committee (DORC) incorporate preliminary cost estimates based on whole of life costs for the proposal under consideration and comparable estimates for other options.

**Response**

This recommendation is not accepted. A Staff Target describes the function and desired performance of an equipment or system as a basis for determining, among other things indicative costs. The main purpose of a Staff Target is to initiate studies into the technical feasibility of the proposed equipment or system. A Major Equipment Proposal is the more appropriate document to include cost estimates.

**RECOMMENDATION 3**

Feasibility studies undertaken by Service sponsors be monitored by the Defence Central Studies Unit to achieve high standards of consistency.

**Response**

This recommendation is partly accepted. The current emphasis on the quality of studies will continue. Central Studies Establishment undertakes many studies related to equipment proposals and is in a position to advise on a wide range of other studies undertaken by Service sponsors. The level of involvement depends on the nature of specific studies and restraints imposed by limited resources.

**RECOMMENDATION 4**

(a) Sole responsibility for advancing a project from acceptance into the Five Year Defence Program (FYDP) to project approval be transferred from the Service sponsor to the Capital Procurement Organisation (CPO). Close relations must be maintained between the CPO and the Service sponsor.

(b) Major Equipment Proposals (MEPs) submitted to the Force Structure Committee (FSC) for acceptance into the FYDP be accompanied by statements containing good quality indicative costs, alternative capability options and a firm time frame for decisions.

**Response**

a. This recommendation is partly accepted. Close relations are maintained between the CPO and the project sponsor, but placing sole responsibility for progress of a project through the FYDP and CPO staff would put undue emphasis of procurement aspects at the expense of force development and force structure aspects.

b. Existing processes accord with this recommendation as a proposal approaches the planned Year of Decision. As a proposal advances in the program, the MEP is refined to take account of the progressive development of cost/capability trade-offs and refinement of capability, cost and timing options.



#### RECOMMENDATION 5

Project definition studies which may be undertaken 'in house', jointly with other Departments and/or private industry or by private industry, be controlled by the CPO.

#### Response

This recommendation is accepted. Project definition studies are under the control of the appropriate Materiel Division in the CPO, and have close operational involvement by the sponsor.

#### RECOMMENDATION 6

Project definition studies include:

- (a) key or performance specifications (including an examination of variations to specifications to contain cost and risk and maximise Australian Industry Participation (AIP));
- (b) tender-quality cost and time-scale estimates;
- (c) detailed assessment of areas of technical risk;
- (d) whole of life equipment support requirements;
- (e) proposed project management arrangements including procedural and reporting arrangements with the selected supplier; and
- (f) a draft Equipment Acquisition Strategy (EAS) including an AIP strategy.

#### Response

This recommendation is accepted but project definition studies normally will continue to involve items (a), (c), (d), (e) and (f). However good, rather than tender-quality, cost and time-scale estimates are more practicable at the project definition stage.

#### RECOMMENDATION 7

The endorsed Staff Target be reviewed in the light of project definition studies before endorsement as a Staff Requirement.

#### Response

This recommendation is not accepted. The Staff Requirement is in effect the Staff Target, reviewed as a result of studies and analysis. No need exists therefore to update the Staff Target.

#### RECOMMENDATION 8

No MEPs be considered for project approval unless accompanied by:

- (a) key specifications and an examination of differing levels of capability to contain cost and time and to provide varying levels of AIP;
- (b) tender-quality cost and time estimates;
- (c) a detailed assessment of areas of technical risk;
- (d) a complete listing of equipment support requirements; and
- (e) an endorsed EAS including an outline of proposed management arrangements.

#### Response

This recommendation is consistent with current procedures. The Force Structure Committee examines the key issues of capability, cost, risk and timing including capability/cost trade-offs, likely industry involvement and support arrangements, as well as other aspects of a proposal as reflected in an MEP. This information is refined as the proposal advances in the FYDP through to the year of decision when project approval is sought from Government. At this time an endorsed EAs will exist. Not until this approval is obtained can tenders be called and detailed information of the kind reflected in the recommendation be sought and considered and developed in further stages leading to a brand name approval by Government.

#### RECOMMENDATION 9

The Defence Costing Manual at present being revised include a section describing procedures for costing major equipment proposals. These procedures should address the need for estimates to:

- (a) cover all project elements;
- (b) be built up from the lowest work task level;
- (c) meet confidence levels required for the stage of development of the project; and
- (d) include appropriate contingency allowances.

#### Response

This recommendation is accepted. The revised Defence Costing Manual will include a section on these items.

RECOMMENDATION 10

Appropriate training programs be instituted following the issue of the revised (and expanded) Defence Costing Manual.

Response

This recommendation is accepted. A training package will be developed once the revision of the Defence Costing Manual has been completed.

RECOMMENDATION 11

Consideration be given to the establishment of a Project Costing Unit within the CPO with links to the Financial Services and Internal Audit Division and with specific responsibility for:

- (a) providing expert advice on project costing;
- (b) monitoring the quality of project estimates; and
- (c) maintaining an equipment cost data base.

Response

This recommendation is accepted however within the limits of its existing resources, expertise on project costing will be developed in the CPO. Advice to the CPO, eg on costing policy, maintenance of public sector accounting standards, and 'full costs' reporting in relation to projects will come from the Financial Services and Internal Audit Division.

RECOMMENDATION 12

- (a) As the key planning documents an Equipment Acquisition Strategy (EAS) and a Project Management and Acquisition Plan (PMAP) must be compiled for all major projects irrespective of the coverage of other documents.
- (b) The EAS must be endorsed by the Defence Source Definition Committee prior to project approval and form part of the submission to Government.
- (c) The PMAP must be agreed upon by all Departmental parties (Service sponsor, project director, functional agencies) before the commencement of the implementation phase. Where detailed plans are not possible prior to commencement, indicative planning must be undertaken before significant related work commences. Later revisions of the PMAP should incorporate the subsequent detail.

Response

- (a) This is accepted practice for major projects.
- (b) This generally occurs although only the major elements of the EAS, which can be very detailed, are used in advice to Government at the time of seeking project approval.
- (c) This is accepted practice.

RECOMMENDATION 13

The EAS and PMAP provide a definitive baseline for the project director, with the PMAP being a binding agreement between the Departmental parties involved in project implementation. Amendments to the PMAP would therefore be subject to formal procedures.

Response

This arrangement is already in place.

RECOMMENDATION 14

Guidelines for the compilation of the EAS and PMAP be augmented to require that:

- (a) resource plans include detailed consideration of computer services and manpower needed throughout the life of the project;
- (b) the level of assessed risk is appropriately matched by monitoring and control systems; and
- (c) all information and control requirements are assessed for their cost effectiveness.

Response

The guidelines have been amended to accommodate this recommendation.

RECOMMENDATION 15

A study be undertaken to establish the feasibility of applying computer simulation modelling techniques to project planning.

Response

Recommendation 15 is accepted in principle, however feasibility depends on the availability of suitable software and data. Attention is being directed to those aspects in considering its future use.

RECOMMENDATION 16

Adequate computer support be provided for project planning with priority in the areas of schedule analysis and resource scheduling and levelling.

Response

Action is underway to acquire the necessary equipment. This is addressed in the CFO ADP Strategic Plan.

RECOMMENDATION 17

At the outset of each project, an adequate planning team including appropriate technical and industrial expertise must be established. Where internal expertise is unavailable, specialist planning expertise should be contracted from outside the public sector.

Response

This recommendation is accepted. Where internal expertise is unavailable or resources are limited, private sector organisations will be employed in keeping with the priority of the project and subject to the availability of adequate financial resources.

RECOMMENDATION 18

For major projects the project director have responsibility for the development of tender and contract specifications from the endorsed Staff Requirement and be given sufficient technical staff on a full-time basis and/or priority access to staff in the functional technical areas to manage this responsibility.

Response

This recommendation is accepted. The project director has this responsibility already and has access to the resources to undertake the task.

RECOMMENDATION 19

Where in-house technical expertise is lacking, funded project definition studies be used to obtain tender-quality specifications.

Response

This recommendation is accepted. When appropriate, funded project definition studies are undertaken to secure tender-quality specifications.

RECOMMENDATION 20

For design and development projects, consideration be given to employing outside and possibly overseas technical management expertise on a contract basis.

Response

This occurs and will continue where appropriate.

RECOMMENDATION 21

Request For Tender documents include a full description of:

- (a) all build or production control standards to be applied; and
- (b) all quality and other technical management procedures to be applied for the duration of the contract.

Response

This is standard practice.

RECOMMENDATION 22

A single set of comprehensive guidelines be issued for Defence tendering, source selection and contract negotiation. These guidelines should pay particular attention to phased tendering options and post-tender negotiations with tenderers for major contracts to ensure that:

- (a) potential suppliers are given adequate opportunity to obtain clarification of Requests For Tender at tenderers' conferences;
- (b) requests for clarification of individual tenders are handled to ensure other tenderers are not disadvantaged; and
- (c) there is a comprehensive assessment of each short-listed tenderer's capability to supply the item to requirement and to the time and cost proposed. Management as well as technical capability should be assessed.

Response

This recommendation is accepted. Comprehensive guidelines and procedural documents covering tendering source selection and contract negotiations have been developed.

- (a) Opportunity is given for clarification of RFTs at tenderers' conferences and relevant instructions on procedures address this requirements. This issue is addressed in the EAS.
- (b) Efforts are made and will continue to be made to ensure ample opportunity is given to individual tenderers to clarify aspects of RFTs.
- (c) This occurs in the course of evaluating proposals.

**RECOMMENDATION 23**

Increasing use be made of incentive pricing in Defence contracts for both cost re-imbusement and fixed price contracts. Incentives should cover cost schedule and quality deliverables.

**Response**

This recommendation is accepted in principle. When assessed as cost effective and appropriate to the relevant purchase, incentive pricing is applied.

**RECOMMENDATION 24**

Programs be instituted to:

- (a) train staff in the Purchasing Authority in these new types of contracts; and
- (b) acquaint and obtain the support of local industry for such contracts.

**Response**

This recommendation is accepted. Funds have been provided in 1986-87 to acquire a suitable package to teach what is a difficult technique.

In 1986 and subsequent years Defence contracts seminars for Industry will include information on incentive price contracts.

**RECOMMENDATION 25**

All contracts include provision for arbitration to resolve contractual disputes.

**Response**

This recommendation is accepted. RFTs include an arbitration clause which is then registered into a contract.

**RECOMMENDATION 26**

Progress payments not be made before prompt certification of the work for compliance with quality requirements.

**Response**

This recommendation is accepted.

**RECOMMENDATION 27**

Current Excusable Delay provisions be revised to precisely specify the events for which claims can be made and the period of consultation to resolve claims. Each party to the contract should be similarly bound.

**Response**

This recommendation is not accepted. It is not practicable for contracts to list all conceivable events which might cause contract delay outside the contractor's control. The current pro-forma contract in DEFPU101 is considered to provide an effective and flexible clause.

**RECOMMENDATION 28**

Multiple project definition studies be considered to maintain competition in the award of production or development contracts.

**Response**

The recommendation is accepted in principle. It may not however be possible to maintain competition in some projects, such as those of a design and development nature and/or for which there is a limited or unique source of supply.

**RECOMMENDATION 29**

Wherever possible, use be made of commercial contracts rather than Foreign Military Sales arrangements for US-sourced major equipment items.

**Response**

There are instances where FMS provides the most economical and effective purchasing arrangement. However, the most appropriate purchasing arrangement is considered in the course of developing an Equipment Acquisition Strategy for each project in the light of the particular circumstances of that project.

RECOMMENDATION 30

A Cost Schedule Control System (CS<sup>2</sup>) development program be introduced to assist Australian Defence contractors to upgrade their management information systems.

Response

This recommendation is accepted. Action will be taken to ensure Australian contractors for future Defence projects are alerted to any requirements for CS<sup>2</sup> which will be used where appropriate.

RECOMMENDATION 31

CS<sup>2</sup> must become the basis for cost and schedule reporting by contractors for all major projects.

Response

This recommendation is partly accepted. Contractors will be required to introduce CS<sup>2</sup> for contracts for which it is assessed the system will be cost efficient (ie high priced cost reimbursement contracts with or without incentive fees and high priced fixed priced contracts with incentive fee).

RECOMMENDATION 32

Progress payments be geared to the submission of satisfactory CS<sup>2</sup> reports.

Response

This recommendation is partly accepted. It is believed there will be a transition phase before expertise and agreements on approach are built up in both Defence and Australian contractors in relation to the operation of CS<sup>2</sup> for relevant contracts - see also response to recommendation 31.

RECOMMENDATION 33

Greater priority in financial and manpower resources be given to the extension, development and upgrading of computer support for project management and the target date for the integration of Service systems be brought forward.

Response

This recommendation is accepted in principle. Priority is being given but financial and manpower resource requirements for this project have to be balanced against other Departmental priorities.

RECOMMENDATION 34

Tender specifications incorporate detailed quality control requirements audited during tender evaluation.

Response

This recommendation is accepted. The suggested procedures are already in place.

RECOMMENDATION 35

A quality management program be commenced to ensure that all local suppliers of items of major equipment comply with Australian Standards AS 1822, as a minimum, by the end of 1987. Thereafter no contracts should be entered into with local suppliers which do not meet these standards at the time of commencement of work.

Response

The recommendation is not accepted. Compliance with these Australian standards is expected of local suppliers of items of major equipment but complete insistence may in some areas involve unjustifiable costs.

RECOMMENDATION 36

For all major projects involving significant technical risk, responsibility for the quality assurance function be vested in the project director and appropriate quality assurance personnel seconded to the project office.

Response

The recommendation is accepted. The project director has a responsibility for managing quality assurance.

RECOMMENDATION 37

Contract change proposals which are initiated by the Service sponsor and which affect cost or time must be subject to the agreement of the project director and require offsetting savings to be provided by the sponsor. Agreement between the project director and the Service sponsor should not impose irrecoverable costs on the contractors.

Response

This recommendation is accepted. Instructions are being written to satisfy this requirement, although recognition has to be made that under extraordinary circumstances offsetting savings from the sponsor may not be possible.

RECOMMENDATION 38

Project directors be given authority to approve contractor-initiated contract change proposals provided that the changes do not amend the technical characteristics in the Staff Requirement, the overall project budget or approved completion date.

Response

The recommendation is accepted. The project director already has this authority, provided that the contract changes do not impact on contract conditions, eg. weakening of a warranty.

RECOMMENDATION 39

The Services, in consultation with the appropriate Australian industry, review their present design approval procedures to see whether they can expedite design and development projects.

Response

The recommendation is accepted. This matter is being given greater attention in projects involving design approvals.

RECOMMENDATION 40

Contractors be encouraged to provide notice of pending contract change proposals.

Response

This is normally covered in contract discussions. However it will be reinforced with instructions.

RECOMMENDATION 41

As a matter of priority the regional operations of the Defence Purchasing Organisation be reviewed to reduce purchase order processing times.

Response

The recommendation is accepted in principle. The DPO establishment (now the Defence Contracting Organisation) is currently being reviewed with the aim of strengthening the systems management capability of the organisation and thereby reduce purchase order processing times. Purchase order process times in the Regional operations of DCO have been reduced from an average of 274 elapsed days in 1981-82 to 150 days in 1985-86. With further improvements including the incorporation of the results of the current review, the aim is to reduce this to 100 days in 1988-89.

RECOMMENDATION 42

The Chief of Capital Procurement issue consolidated guidelines covering total project documentation requirements. Such documentation must be standardised across the Services to the maximum extent possible.

Response

This recommendation is accepted. The requirement is recognised and action has commenced in the context of developing and introducing project management support systems. A "Guidelines" booklet is to be prepared and issued.

RECOMMENDATION 43

The proposed project documentation guidelines address the format and content of project progress reports and require:

- (a) reference to issues outstanding from previous reports;
- (b) a report of progress, nature of problems and remedial action taken or proposed;
- (c) summary information only, supported where necessary by sufficient explanatory detail; and
- (d) the use of straight forward language (technical terms and acronyms should be defined).

Response

The recommendation is accepted. Please see comments at Recommendation 42.

RECOMMENDATION 44

Quarterly Milestone Reports to senior management must include an analysis of cost and schedule variances and a summary of proposed remedial action.

Response

This recommendation is accepted. A review of project reports to senior management is underway and the revised milestone reports will include cost and schedule variance data.

RECOMMENDATION 45

An internal efficiency and effectiveness review of a major project be undertaken by the end of 1986. This review should help establish the methodology of future regular internal reviews of major equipment projects.

Response

This recommendation is accepted. A major project (Australian Frigate Project) has been reviewed by Defence Internal Audit Staff.

RECOMMENDATION 46

The Chief of Capital Procurement issue, as a matter of priority, a comprehensive Defence Project Management Manual for the guidance of project directors in all Services. Where there is conflict between the Manual and Service procurement instructions, the Defence Project Management Manual should take precedence.

Response

This recommendation is accepted. The Capital Equipment Procurement Manual (or CPO Manual) is being progressively prepared as a matter of priority. The Manual will be the authoritative source for the policy and procedures for use in the acquisition of capital equipment for the Department of Defence.

RECOMMENDATION 47

The Service sponsor appoint a representative to liaise with the project office at the time the draft Staff Target is raised. That position should continue to function as the sponsor representative throughout the period of the project.

Response

The recommendation is accepted in principle. A system will be introduced whereby a representative of the Services sponsor will be appointed when the Staff Objective is endorsed and be maintained as the liaison point with the Project Office for the duration of the project.

RECOMMENDATION 48

A project director be appointed within the CPO at the commencement of detailed project definition. For major projects, where responsibility for the definition studies rests with the project director, a dedicated project team sufficient to conduct or supervise the studies should be established.

Response

This is current practice and will continue.

RECOMMENDATION 49

The endorsed Staff Requirement establish the basis for sponsor requirements and form the basis of a binding agreement between the Service sponsor and the project director. Subsequent amendments to the Staff Requirement should be subject to formal procedures and the mutual agreement of the Service sponsor and project director.

Response

This recommendation is accepted. The Staff Requirement as embodied in the endorsed project approval by the higher defence machinery or the Government is the basis for the execution of the project by the project director on behalf of the sponsor. Changes to these requirements are controlled by established procedures.

RECOMMENDATION 50

The project directors of large and complex projects be assisted by their own technical staff. Whether these specialist staff are transferred on a permanent basis to the CPO or seconded temporarily should be decided on practical grounds.

Response

The project director already has this authority.

RECOMMENDATION 51

Full authority must be given to the project director to expedite the project within the endorsed parameters relating to technical performance, cost and time, subject to annual Budget allocations and Government policies.

Response

This recommendation is accepted. The size and composition of a project office is related to the complexity of the project and where appropriate project directors are provided with a dedicated staff. Where this is not considered appropriate on cost grounds, the project director will continue to be given the necessary authority to adequately manage the project.

RECOMMENDATION 52

The size and composition of the project office be directly related to the scope of tasks necessary for the efficient exercise of authority granted to the project director under recommendation 51 above.

Response

This recommendation is accepted and where appropriate this is done.

RECOMMENDATION 53

Selection criteria for all project directors positions must give the highest priority to experience and training in project management.

Response

This recommendation is partly accepted. Project directors will continue to be selected in accordance with the requirements of the individual project. Experience and training in project management will be important criteria in the selection process.

RECOMMENDATION 54

Selection criteria for other senior project personnel stipulate prior project management experience and training as a necessary qualification.

Response

This recommendation is partly accepted. Senior project personnel will continue to be selected in accordance with the requirements of the individual project. Experience and training in project management and other necessary skills will be important criteria in the selection process. Significant opportunities for training in project management and procurement to meet the requirement of project directors and staff are available within and outside DOD and are extensively promoted.

The Public Service Board is concerned that adoption of recommendations could result in a narrow approach to the selection of senior project management staff, that could exacerbate problems in finding suitable people for this work. The requirement for 'experience and training in project management' could cause committees to overlook talented people from other backgrounds who have the skills and abilities to undertake project management work.

The Board suggests that an alternative approach might be to specify the skills and abilities required for project management. In addition to possession of these skills and abilities, an applicant might also be asked to demonstrate the ability to apply them to tasks at an appropriate level of complexity and responsibility. The evidence required might often come from reports on work in project management, but

people who have applied relevant skills in other contexts should not be excluded. This approach is reflected in the Board's selection guidelines published in Volume 7 of the Personnel Management Manual.

From discussions on this matter, the Board understands that the Department of Defence, while giving due weight to experience and training in project management, avoids undue emphasis on experience per se in favour of assessing the extent to which applicants, regardless of background, are able to demonstrate that they have the skills and knowledge for project management.

RECOMMENDATION 55

Where experienced project management personnel are not available from within the public sector, project management services be obtained from the private sector on a contract basis.

Response

This will be done as appropriate.

The Public Service Board advised section 82AE of the Public Service Act allows the appointment of persons for a fixed term under certain conditions which include to provide specialist services or knowledge which cannot be obtained within the Public Service. The relevant guidelines state:

'Use of Fixed Term Employment 53. The Secretary of a Department, or the delegate, may, with the approval of the Public Service board, engage persons for a period of up to five years:

to perform duties in connection with a project or task that has a fixed duration and where the duties require ability that cannot be made available from within the Service and the services of the person are not likely to be required after the project or task is completed.

54. It is anticipated that there will be only a very limited number of fixed term engagements under section 82AE.'

RECOMMENDATION 56

The Department of Defence report to the Committee what steps it proposes to take to reduce recruitment times for civilian staff.



**Response**

The issue whether the Department should report directly to the Committee is a matter of principle and the Minister has responded separately - see paragraph 3.2(g) and 3.2(h).

**RECOMMENDATION 57**

As a measure to reduce the effect of civilian recruitment delays, consideration be given to establishing a pool of staff within the CPO to assist projects on a short-term basis, preferably in the initial phases.

**Response**

The recommendation is partly accepted. The viability of this proposal depends on the extent to which a pool of staff can be fully and effectively utilized. Where recruitment lead-times are expected to exceed project planning lead-times, attempts will be made to have additional technical advice available to projects (particularly in their initial phase) from within the CPO.

The Public Service Board advises that, considerable progress has been made in recent months in streamlining procedures for recruiting computer systems officers including the adoption of an 'immediate offer' strategy for outstanding applicants.

The Board is aware of difficulties faced by Defence in seeking suitable staff for a number of occupational categories relevant to project management. The Board is at present (JULY 1986) exploring ways of improving recruitment flexibility for technical officers and Cost Investigators.

**RECOMMENDATION 58**

Universities and other tertiary institutions in Australia be invited to develop for Defence staff special post-graduate courses which give emphasis to the deficiencies in project management identified in this Report.

**Response**

The recommendation is accepted. A survey of institutions is in progress.

**RECOMMENDATION 59**

Project management training be incorporated in the undergraduate courses to be given at the new Australian Defence Force Academy.

**Response**

The recommendation is accepted. Discussions have been held with ADFA who will consider the need for incorporation of project management training into the undergraduate course.

**RECOMMENDATION 60**

With the establishment of Australia-based higher level project management training, the use of overseas courses be substantially reduced. The purpose of overseas training should be to give project staff exposure to the management of similar projects by allied services and to advanced project management practices generally.

**Response**

The recommendation is accepted in principle. This matter is currently under review with the aim of reducing reliance on overseas courses.

**RECOMMENDATION 61**

The Public Service Board be invited to develop, in consultation with Defence and other relevant Commonwealth agencies, a career path, possibly not confined to Defence, for civilian project management personnel.

**Response**

The Board will continue to pursue the matter with the departments concerned. The Board also notes that, while the career path envisaged in this recommendation may be attainable in some form for project directors/managers in the Departments of Defence and Housing and Construction, there are important structural and economic (ie costs and benefits) issues which will need to be addressed. Not least of these will be the need for adherence to the National Wage Case Principles (for any re-arrangements involving salary increases) and consultations with relevant staff associations.

**RECOMMENDATION 62**

The Services develop as far as possible career paths for technical staff officers within the overall materiel management area.

**Response**

The recommendation is accepted. Career planning is made difficult by the shortage of technical staff officers and the need to employ officers in non-technical areas.

RECOMMENDATION 63

- (a) The promotion prospects of military officers posted for extended periods to project offices not be affected adversely.
- (b) More systematic effort be given to effective project management hand over procedures. The 'shadow posting' of key project staff prior to the assumption of their responsibilities should be considered.

Response

- (a) Every effort will be made to ensure this occurs.
- (b) Where possible, increased handover periods for staff will be arranged. Improved training and documentation of project management procedures will facilitate handovers.

RECOMMENDATION 64

As part of the Financial Management Improvement Program, control over project administrative budgets be delegated to project directors subject to Departmental guidelines about the employment of consultancy services, ADP acquisition, etc.

Response

The recommendation is accepted in principle. Existing departmental processes are considered generally appropriate. However, in certain areas, and in particular acquisition of computers, devolution of authority has taken place or is in the process of review.

The Public Service Board strongly supports this recommendation. The Financial Management Improvement Program encourages initiatives which lead to better definition of managerial responsibility, devolution of authority as far as practicable down an organisation and which ensure that managers have the necessary flexibility to use resources so as to meet their responsibilities.

RECOMMENDATION 65

The Department of Finance investigate closely the methods used by Defence to monitor real cost changes and, for the purposes of consistency in reporting, identify an appropriate price deflator which may be used to monitor price changes.

Response

The Department of Finance, whilst acknowledging involvement in the cost monitoring process (as stated by Defence) notes that Defence's methodology for calculating real project cost increases is currently being reviewed'.

RECOMMENDATION 66

The Department of Defence report to the Committee on its investigation of the feasibility of introducing a comprehensive resource costing system throughout the Department and particularly within the CPO.

Response

The issue of whether the Department should report directly to the Committee is a matter of principle and the Minister has responded separately - see paragraph 3.2(g) and 3.2(h).

RECOMMENDATION 67

The Department of Defence submit each year to the Parliament a report on its major capital equipment program detailing for each project:

- (a) the total project cost and in-service dates initially approved/endorsed by the Government;
- (b) the current estimated total project cost and in-service dates;
- (c) an explanation of any cost and schedule variance identified in (b);
- (d) a summary of management action taken or proposed to correct or minimise the effect of any cost or schedule overruns; and
- (e) total expenditure to date on the project.

Project costs should include all elements of the project, ie spares, support equipment, training, Australian Industry Participation, etc and cost data should be expressed on common price and exchange rate bases. Individual project report items should cover all phases of the project and refer to related projects (present or not yet approved) which address the same military capability requirement (for example specialised ammunition and training equipment).

**Response**

In relation to the proposal at recommendation 67, that the Department submit each year to the Parliament a report on its major capital equipment program, it is noted that:

- (a) to the extent that any project needs significant additional funding in the course of its life, the matters for Committee wishes to have reported are dealt with in the Appropriation Bills and supporting documents and already come, under scrutiny by the Parliament including its other Committees; and
- (b) there are likely to be significant resource implications in the preparation of annual reports of the detail proposed.

The Department of Finance has confirmed that the supporting documents referred to by Defence are those provided to the Senate Estimates Committee, (that is, the Explanatory Notes to Appropriation Bill (No 1) and the written replies to questions asked during Estimates Committee examination). Finance considers that the Appropriation Bill and these documents, taken together, do not provide the information the Committee seeks to have presented to Parliament, in the terms indicated at Recommendation 67 (a), (c) and (d).

The Department of Finance considers that information of the type outlined in Recommendation 67 should be of significant assistance to all those involved in the scrutiny of progress and costs of major defence capital acquisitions.'

**RECOMMENDATION 68**

The reports be referred to the Auditor-General for investigation and report if the project costs escalate by more than fifteen per cent per annum or if the Auditor-General thinks fit.

**Response**

A detailed response from the Australian Audit Office is at Appendix B.

*Michael Keating*  
M S KEATING  
SECRETARY  
Department of Finance

SEP. 17 1988

APPENDIX A

JCPA DELIBERATIONS - EVIDENCE CLARIFICATION

This paper sets out some areas of misleading information contained in the JCPA Report 243 on the Review of Defence Project Management. It is not intended to be a comprehensive listing, including all matters of detail, but to clarify some of the more substantial areas of either misinterpretation or misunderstanding of evidence.

Cost Over-Runs

In a chart on page 15 of Volume 1 of the Report, the Committee diagrammatically highlights what it describes as "cost over-runs" on sixteen projects. For one of these projects, the Guided Missile Frigate Project, the chart portrays a real cost over-run of 177.5% and a total cost over-run of 443%.

The apparently obvious conclusion is that this was a project with runaway costs, especially as, in proportionate terms, the cost increase is shown to be the greatest of the sixteen projects. Such a conclusion would be mistaken because it is made on an unequal basis of comparison without regard for the way in which the project was developed and modified to meet changing circumstances and respond to other Government decisions.

The project spans a decade of unprecedented inflation and variation in foreign exchange rates. These of course were not within the control of the Department of Defence.

The project was significantly varied by a series of Government decisions - not the least being the addition of a further two ships (in 1977 and in 1980). The capability and cost of the helicopters acquired for the frigates were affected by the decision not to replace the aircraft carrier HMAS MELBOURNE, as this decision gave a greater role to the frigates in anti-submarine warfare. Developments in anti-ship missiles and defence against them over this period were also taken into account. These facts are partly reflected in the report but it is useful to make them clearer.

It was administratively sensible to manage all these changes by adding to and modifying the original project, but it is misleading to compare the opening cost estimate of that project with the final cost of the greater number of ships and new equipment.

One other example where misunderstanding could arise relates to HMAS SUCCESS. In Volume 2 at page 69, the second paragraph reports the cost over-run as the difference between the price of the ship only of \$68m at

contract signature and the latest estimate of the total project cost of \$197.4m. The latter covers the cost of the ship and all of its associated support. For a fairer comparison the initial ship only price of \$68m should be compared with the expected final ship only price of \$95m.

The presentation of the information in the chart on page 15 in proportionate terms fails to bring out the fact that the real increases in the sixteen projects are offset by the real reductions, especially that shown for the F/A-18 Tactical Higher.

Contracting Issues

Paragraphs 6.46 to 6.49 of the report comments on certain contractual shortcomings, comprising a lack of firm contractual penalties and incentives as reflected by a lack of contracting experience in the Purchasing Authority and the Attorney-General's Department. The view of the 1971 Report of the Defence Legal Services Committee chaired by Professor Whitmore, especially in relation to United States procurement law is used to support this position.

In the 1970's a sub-office of the Attorney-General was established within the Department of Defence to advise on procurement matters. In 1982 the sub-office became part of the Contracts Branch in the Commercial and Drafting Division of Attorney-General's. Since 1973, officers have continually advised the Department of Defence in relation to the procurement of defence equipment. Attorney-General officers are also engaged in settling standard forms of defence tender and contractual documentation and, in recent times, an officer of that Department has completed studies in US procurement laws.

The charge of lack of expertise in Attorney-General's thus seems highly questionable given these developments since 1971. Comment on the expertise of the Contracting Authority is separately addressed in relation to Committee recommendations.

P3-C Project

The report indicates wrongly that the refurbishment of the existing P3B aircraft would have resulted in potential savings of \$82m, compared with the option of procuring new P3Cs. This is not the case and the evidence, presented correctly, records that a potential saving of \$82m would flow over 12 years from purchase of the new P3Cs versus refurbishment of the P3Bs.

Role of the FSC

The JCPA identifies only the programming role of the Force Structure Committee (FSC) when it notes that the FSC assigns financial priority to proposals in the light of the Government's forward financial guidance. The FSC has much wider responsibilities, that call for independent analysis, review and assessment of Service equipment proposals. The current role of the Committee is "to provide advice to the Defence Force Development Committee and to participate in decision making on the development of the force structure, FYDP and major equipment proposals and to keep these matters under review". This broader function was outlined in the Department's paper 'The FYDP' (pp 2192-2206).



COMMONWEALTH OF AUSTRALIA  
AUSTRALIAN AUDIT OFFICE

101 Macquarie and Balfour Streets, Canberra City, A.C.T. 2600

APPENDIX B

Address correspondence to  
Auditor General  
Box 707, G.P.O. Canberra 2601  
Telegrams: Comaudit  
Telex: 61653 Comaud  
Telephone: 484711

Please quote  
F84/471

18 July 1986

The Secretary  
Department of Finance  
CANBERRA ACT 2600

JOINT COMMITTEE OF PUBLIC ACCOUNTS (JCPA)  
243RD REPORT - REVIEW OF DEFENCE PROJECT MANAGEMENT

I refer to your memorandum 86/0596 of 27 March 1986 seeking our comments on Recommendation 68 of the JCPA's Report.

2. If adopted, the Recommendation would, inter alia, impose a specific obligation on the Auditor-General to investigate and report on major capital equipment projects where the project costs had escalated by more than 15%.
3. We understand from oral discussions with the Attorney-General's Department that in a formal sense the Minister for Finance would have authority under sub-section 45(1) of the Audit Act to direct the Auditor-General to undertake such investigations. As you know the Minister's power of direction contained in sub-section 45(1) has lain dormant for many years, no doubt reflecting the strengthened recognition, over a long period, that the Auditor-General should be, and be seen to be, independent from the Executive. I know that the Auditor-General regards this provision as an anachronism, and considers that it would best be repealed on some convenient occasion. He undoubtedly would be strongly opposed to resort to this provision in the present context.
4. I venture to suggest that it is unlikely in the extreme that the JCPA itself, in framing this recommendation, contemplated Executive direction of the Auditor-General.
5. As to the present case we have a great deal of sympathy with the spirit of the JCPA's recommendation but must advise against its adoption, for several reasons.

6. First, there is the question of audit resources. The Project Management Review included in the Auditor-General's September 1983 Report mentioned that the Department of Defence has in the order of 150 major procurement projects in progress at any one time. We have enough first hand experience to say that any investigation of a major Defence procurement project is a complex process and requires considerable resource allocation. Indeed in the period to the end of 1983, the great majority of audit resources available for Defence activities were devoted to capital procurement projects.

7. The Project Management Review was based on the audits of 10 major projects reported over the preceding 3 years. The JCPA inquiry looked at 16 major projects (4 of which were included in Auditor General's Reports) over a 2 year period. Our experience suggests that a review of the kind envisaged by the JCPA would require an additional 2 staff years for each project. The total additional staff requirements would depend on the number of projects requiring examination each year. In this context the JCPA Report suggests (page 15) that of the 16 projects it examined, 6 would require referral to Audit. But from this distance the total annual workload is difficult to estimate.

8. More recently, resources have been directed towards Defence's operational activities. Two efficiency audits (Army Mapping and Principal Item Stock Control Entitlement System (PISCES)) are currently in progress and reviews of other major auditable areas in Defence have been programmed over the next 3 years. We consider it important that the AAO should maintain a reasonable balance between its coverage of capital programs and operational activities.

9. In addition our planning has also taken into account the additional audit resources necessary for the revised financial statements of the business undertakings within the Office of Defence Production.

10. The total audit resources allocated each year to Defence activities is determined by the AAO's Priorities Review Committee (comprising the Auditor-General and his senior staff) having regard to competing claims for resources to cover the activities of other auditees. A further mandatory obligation for audit coverage in Defence which is likely to require significant additional resource allocation would, therefore, have serious implications for the AAO's overall resource planning. The above comments are, of course, predicated on the assumption that the AAO would not receive additional AOSL supplementation for this task.

11. Second, I question whether it is appropriate to apply a mandatory audit review only in cases where there has been a prescribed cost overrun. A reading of previous Auditor-General's Reports as well as the JCPA's own enquiries suggest that cost is only one of the criteria against which a project's success can be measured. Moreover project managers could be encouraged to


contain cost overruns, at the expense of, say, performance objectives, in order to avoid audit review and subsequent Parliamentary scrutiny.

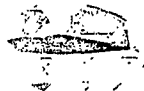
12. In essence, we wonder whether Recommendation 68 is necessary. The AAO's planning processes already require Audit Directors to take into account any explanations or submissions that Departments make to Parliament or its Committees. And we can point to several instances (not only in Defence) where an Audit enquiry, and subsequent report to Parliament, has been prompted by a Departmental explanation or submission to a Parliamentary Committee.

13. It follows that if Recommendation 67 is accepted by the Government then the AAO would have regard to the reports prepared by the Department of Defence and schedule an appropriate review if the information contained in those reports, taken together with other information in the Auditor's portfolio, so warranted.

14. The modern approach to auditing involves the examination of a representative sample of projects with a view to reviewing management systems and processes and identifying those common elements which indicate a need for improvement in management controls. Consistent with that approach the Auditor-General should continue to exercise the discretion to review a sample of projects that would enable conclusions to be drawn on some general principles which then could be applied to the totality of projects. Accordingly, should the Government be disposed to accept Recommendation 67 we suggest the response to Recommendation 68 should be that:

"The reports be referred to the Auditor-General for consideration and subsequent investigation and report on any projects where he may deem it appropriate to do so."

  
P.L. Lidbetter  
First Assistant Auditor-General



Millicer Aircraft Pty. Ltd.

PO BOX 280 ROSELAND NSW  
141 BIRCH ST SYDNEY NSW 2000  
AUSTRALIA  
Tel: 02 92 2 70108 Telex: 02 211 8624  
Fax: 02 92 2 70107 Post: 02 92 000 1114

Sydney  
30th June, 1986

APPENDIX A

Representation from Millicer Aircraft Pty Ltd on the RAAF  
Basic Pilot Trainer Aircraft Project, dated 30 June 1986

Senator George Georges,  
Chairman,  
Joint Committee of Public Accounts,  
Parliament House,  
CANBERRA ACT 2600

Dear Senator,

BASIC PILOT TRAINER  
AIRCRAFT PROJECT  
(RAAF'S AFSR5044 STANDARD)

We read with interest your Committee's excellent Review of Defence  
Project Management Vol.2. Project Analyses; Report No. 243.

We were however surprised and disappointed to notice Joint  
Committee on Public Accounts comments reading (p.153):

OTHER COST SAVING TRAINING OPTIONS

8.27 The Committee is unable to find in the project records any analysis of alternatives to a new aircraft acquisition. The designer of the CT-4 aircraft has been reported as stating that the airframe and wings of the CT-4 has a long remaining life and the aircraft could be upgraded (by installation of a new engine and re-design of the tail plane) to meet the RAAF's basic trainer aircraft performance requirements for about \$400,000 each.17 The option does not appear to have been explicitly considered when the Government re-structured the Basic Trainer Project in July 1985.

17. "RAAF Should Recycle Jet Trainer" Australian, 9  
September 1985 (by Peter Young, Defence Correspondent).

We would like to put on record:

- (i) Millicer Aircraft Pty. Ltd. indeed made a firm offer to the RAAF by telex on 13th and 14th September 1985.

- (ii) The offer covered re-design and aerodynamic to the now obsolete CT-4. Conversion would result in a modern cost-efficient Australian designed and built airtrainer. Its developments and construction is under guidance and supervision of the designer of Aircruiser/CT-4 our Chief Designer Dr. Henry Millicer.
- (iii) Omission to analyse the purely Australian trainer concept seems difficult to justify whilst the Milltrainer 375/500TR can be built at about \$400,000 per airframe, or \$600,000 per trainer with a modern turboprop engine. It can fully comply with RAAF's AFSR5044 whilst the PC-9 cannot.

Enclosed memorandum "New Aerospace Facility in Australia" covers some aspects of the RAAF Basic Pilot Trainer Programme.

You would be interested to know that:

- (i) Milltrainer 350/500TR fully complies with the AFSR 5044 specifications.
- (ii) Dr. Millicer's designing capability are of the world standard. Who is better qualified to upgrade the CT-4 than the original designer of it?
- (iii) Our production memorandum of co-operation with Transavia (Member of Transfield Group) joins skills of two firms which not only provided original Australian light aircraft design but effectively build them. Airtourer, Aircruiser/CT-4, Airtruk and Skyfarmer are still extensively employed and flying well.

ECONOMICS OF UPGRADING OF THE RAAF'S CT-4 ARE MOST IMPRESSIVE:

- (i) Capital Expenditure Savings Schedule  
Milltrainer 375/500TR is unsurpassed:
  - At best the savings to the Commonwealth Government can be between:
    - \$194.3 - \$232.5 million
  - Swiss Currency Costs Up  
Further if Australian provisional contracts (December, 1985) with the Oerlikon-Buhrle Armament Group (Pilatus Flugzeugwerke A.G. is a subsidiary of it) were made in Swiss Francs the Swiss Franc to-day is about 17.2% dearer than 8 months ago.  
  
Assuming that the total contract is worth A\$284 million Swiss currency appreciation, in relation to the Australian dollar, could mean an additional cost to the Australian taxpayer of A\$48.85 million dollars.

If our assumptions are correct the PC-9, already the most expensive trainer aircraft in the history of world's aviation, will cost \$332.85 million per fleet of 86 trainers or \$3.9 per trainer.

- We can upgrade/construct 69 (sixty-nine) Milltrainers for \$42.9 million.
- Even if the RAAF opts for 69 PC-9's we can provide 69 Milltrainers within the Cabinet approved budgetary framework of \$284.06 million as a substitute for additional 17 (seventeen) PC-9's which inflated total number of airtrainers to 86 machines.
- This is due to shorter fatigue life of PC-9 than originally estimated. This vital aspect of the PC-9 fatigue life is still not proven by the Aeronautical Research Laboratories, Department of Defence.
- Milltrainer is 5.5 times cheaper than PC-9 without any loss of high quality training capability.
- For \$284.06 million one can build 473 trainers!
- (ii) Operational Savings  
Cost savings schedules prove a phenomenal cost efficiency of the Milltrainer EVEN IF CAPITAL COST EXPENDITURE IS DISREGARDED.
- (iii) Export Potential  
In Milltrainer we have an Australian designed and built trainer. It equals within AFSR 5044 to PC-9 in all aspects, but top speed. Do the airforces of the world wish to train their pupils at 300 Kts (555.6 Km/hr) aircraft?  
PC-9 weighs 85.6% of the World War II Spitfire Mk.1, has a 9.52% HP bigger engine, but the Spitfire MK.1 top speed is up to 20.7% higher than the PC-9.  
  
It seems that the Milltrainer at about \$600,000 a piece is not only very cost-effective training aircraft but also an export winner.
- (iv) Training Fleet Size Reduction Savings by Employing Milltrainer
  - With PC-9 3 (three) trainer fleets (CT-4, PC-9 and Macchi) have to be maintained.
  - Milltrainer Turboprop reduces trainer fleet to 2 (two) types of aircraft.



Cost savings implications in such a fleet size reduction are self evident.

- (v) Australian Aircraft Designing Skills, New Australian Aerospace Off-Set, Modification, Adoption and Maintenance Capability  
These obviously cannot be fully satisfied by two foreign firms which may be engaged in PC-9 project.
- (vi) Prime Minister's "Buy Australian Made" Campaign Article by Peter Young, Defence Correspondent of the Australian covers this issue well.

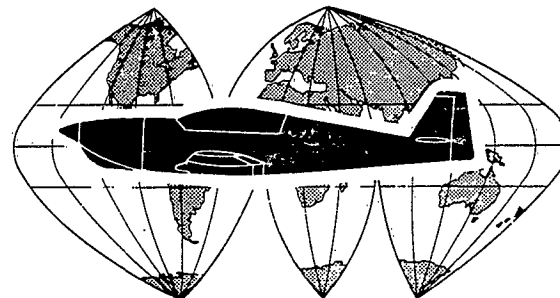
We will be pleased to furnish your committee with any further data you may need.

Yours sincerely,



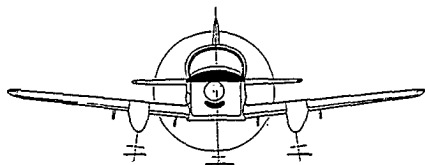
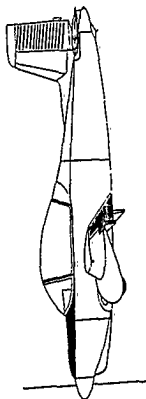
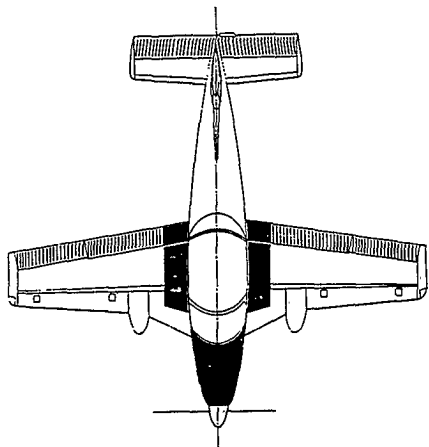
W.J. Henty  
Millicer Aircraft Pty. Ltd.

# MILTRAINER



**Millicer Aircraft Pty. Ltc**  
**Australia**

# Miltrainer 375TR



GARRETT TPE 337-1-101  
Retractable U/C  
V<sub>max</sub> 210 knot at S.L.

## General characteristics

MILTRAINER MODEL	330TF	330TR	375TR
Engine Model	Allison 250 B17B		Garrett 331
Derated horsepower, hp	330		375
Undercarriage	fixed	retractable	
Propeller	Hartzell, 3 blades, 84" dia		
Internal fuel capacity, lbs	552	552	684
Aerobatic weight, lbs	2650	2700	2990
Wing loading, lb/sq. ft	20.5	20.9	23.1
Power loading, lb/bhp	8.0	8.2	8.0
Load factor, limit, G	+6, -3	+6, -3	+6, -3
Performance at ISA+5 deg.c			
Best rate of climb, fpm	2090	2050	2300
Time to 10,000 ft, minutes	5.0	4.9	4.6
Maximum speed at sea level, knots	180	200	210
Cruise speed at 20,000 ft, knots	200	220	252
Maximum sustained G at 10,000 ft	2.6	2.5	2.55
Still air range at 20,000 ft, nautical miles	650	730	800
Stall speed, flaps down, knots	50	50	51
Landing distance over 50 ft, feet	1270	1280	1300

## Comparative data

SPECIFICATIONS Aircraft Make/Model	R.A.A.F. No. 5044 Air Force Staff Requirements for Basic Pilot Training Aircraft	Mittrainer 330TF Basic Trainer	Mittrainer 330TR Basic Trainer	Mittrainer 376TR Basic Trainer
Price as Tested:	NS	Allison 250-B17-c/d	Allison 250-B17-c/d	Garrett 331-1-151
Engine(s) make/model:	"	420	420	715
Horsepower:	"	*330 to 10,000*	*330 to 10,000*	*335 to 20,000*
Horsepower for takeoff:	"	1500	1500	2600
TBO hours:	"	AVTUR	AVTUR	AVTUR
Fuel Type:	AVTUR	AVTUR	HARTZELL 84"	HARTZELL 84"
Propeller:	NIS	HARTZELL 84"	HARTZELL 84"	HARTZELL 84"
Landing Gear type:	TRICYCLE RETR	TRICYCLE FIXED	TRICYCLE RETR	TRICYCLE RETR
Structural Service Life:	20 yrs or 8,000 hrs	Fully met & Proven	Fully met & Proven	Fully met & Proven
Max. A/W Aerobatic lbs.	4410	2650	2550	2770
Max. Landing Weight lbs.	NS	2020	2020	2890
Empty Weight (equipped) lbs.	"	1537	1587	1843
Environmental, Cooling & Press'n	Amst	Some press'n	Some press'n	Cooling & Some press'n
Usable fuel (Vol/Dot (lbr.))	NS	552	552	684 std.
Oil Capacity (lbr.)	NS	20	20	24.3"
Wingspan: ft. & inches	"	26'0"	28'0"	28'0"
Overall Length: ft. & inches	"	23'11"	23'11"	24.3"
Height:	"	NA	NA	NA
Wing Area (sq. ft.):	"	129	129	142
Wing Loading at Max. A/W (lb./sq. ft.):	"	20.2	20.5	23.1
Power Loading (lb./hp.):	"	7.9	8.0	8.0
Accommodation & Equipment	Side by Side Annex "A" 3-8	NOT MET	NOT MET	MET
Systems, Annex "A"	9-13 incl	NOT MET	NOT MET	Met
Expanded Role (Armament)	Annex "A" 20	NOT MET	NOT MET	All MET
PERFORMANCE Flying Qualities & SL	Annex "A" 23-28	NOT MET	NOT MET	Met
Max. S.L. Speed (knots)	NA	NA	200	210
2.5 G @ Altitude, ft.	10,000*	10,000*	10,000*	10,000*
Max. G @ 10,000 ft. G	7.0 (to must)	NA	NA	2.2
Cruise Speed (90% RPM, 17,000 KTAS)	NS	180	200	207
Cruise Speed Max. Cont. S.L.	NS	225	225	235
Never Exceed Speed KEAS	NS	190	190	190
Max. Flap Speed KEAS	90	100	100	100
Estimated endurance, Service 1:	3 hrs + 50 mins	3 hrs + 50 mins	3 hrs + 50 mins	3 hrs + 50 mins
Service 2 & 3, Minutes	111 or 120	MET	MET	Fuel lb: 545 or 496
Stall Speed (Flaps up) KEAS:	70	67	62	67
Stall Speed (Flaps Down) KEAS	65	60	57	61
Best Rate of Climb (ft/min) @ S.L.	NS	2,090	2,050	2,300
Time to climb to 10,000' Mins	5.0	4.9	5.0	4.5
Service Ceiling (ft.):	20,000	31,000	30,000	30,000
Take off ground roll (ft.):	1,640	NA	1,000	1,000
Takeoff over 50ft. (ft.):	1,640	NA	NA	NA
Landing Ground Roll (ft.):	1,640	1,270	1,280	1,300
Landing over 50 ft. (ft.):	1,640	NA	NA	NA

### GENERAL DATA

#### 1. Some Production Details

CTA (Originally Designed as the Aircraft by Dr. H. K. Millner)

44 Royal Australian Air Force Aircraft Active Service Approx. Data

Estimated hrs. flown: 300,000 hrs

Estimated Time Off: 420,000 times

Landing: 420,000 times

14 Royal New Zealand Air Force Aircraft

1 Demonstrator (NZ)

1 Aircraft (Australia)

Structural Damage: Nil

Fatal Accidents during Training: Nil

Structural Service Life: approx. 12,500 hrs

(Fatigue tests carried out by the Aeronautical Research Laboratories Department of Defence Melbourne indicated CTA life can be extended to the early 1990's without additional cost.)

## Comparative data

Hawker De Havilland (Australia) Sidley Aircraft Corp. USA. Sidley Aircraft Corp. USA. Sidley Aircraft Corp. USA. Sidley Aircraft Corp. USA.	Swiss Aircraft Corp. DESA. Sidley Aircraft Corp. USA. Sidley Aircraft Corp. USA. Sidley Aircraft Corp. USA.	Swiss Aircraft Corp. DESA. Sidley Aircraft Corp. USA. Sidley Aircraft Corp. USA. Sidley Aircraft Corp. USA.	Aerospace, N.Z. (Aero Engine Services, Hamilton, New Zealand) CTA Airtrainer Primary RAAF, RNZAF, Royal Thai A.F., Hong Kong Military A.F., Current RAAF Trainer
\$89m. for 104 A/C., 1972	P.T.6. A26	P.T.6. A26	\$3.6m. each
P.T.6. A26	P.T.6. A26	P.T.6. A26	Cont. 10-3800
750	715	1,150	210
*200 to 10,000*	*400	*550	210
NA	NA	NA	1200
AVTUR	AVTUR	AVTUR	100 - 115 Octane
HARTZELL	HARTZELL	NA	HARTZELL 76"
TRICYCLE RETR	TRICYCLE RETR	TRICYCLE RETR	TRICYCLE FIXED
Not Proven	MET	Not Proven	Fully Proven In RAAF Service
2050 NM	4300	4982 NM	2400
NA	3500	4960 NM	2280
NA	2950	3715	1587
Some	Yes, cooling & PR	Yes	None
NA	845	920 + 640 DROP Tanks (NM)	322
NA	NA	NA	19
38'0"	33'4"	33'2"	26'0"
30'8"	28'8"	33'	23'2"
11'2"	9'7"	10'8"	8'6"
219	179.6	178.2	129
24	24	28.4	18.6
6.4	6.4	6.4	6.4
MET	TANDEM	TANDEM NM	NM
TEMP NOT MET	NA	MET	NM
MET	MET	MET	NM
MISSES ON 2/4 ?	NA	MET	NM
195	NA	270	155
NA	NA	20,070	NM
2.3 G NM	NA	3G	NM
220	214	350	NM
195	NA	270	125
252	280	320	207
90	NA	100	85
3 hours + 50 min.	NA	2 Hours + 20 min NM only	NM
NA	NA	NA	NA
68	79 NM	79 NM	67
60 NM	59 NM	70NM	48
2,150	1,480	4,000	1,250
6.1 NM	NA	NA	640
22,000	30,000	38,000	18,000
NA	1,115	788	700
1,520	1,920 NM	1,411	1,390
NA	740	633	600
1,730 NM	1,795 NM	1,624	1,100

\* Beechcraft T-34C-1 Turboprop Training/Light Attack Aircraft, USA

US Air Force 423 Aircraft All in active service

US Navy 104 Aircraft

\* Pilatus Flugzeugwerke A.G., Switzerland

POB Advanced Trainer/Attack Turboprop Aircraft

Two Prototypes (Status as on December, 1985):

No. 1 Swiss Registration HB - HPA

No. 2 Swiss Registration HB - HPB

Not certified by the Swiss Authorities to date. Not accepted by the Swiss Air Force as a trainer.

Structural Service Life: Not proven. No fatigue test neither of the wing or fuselage carried out by the Aeronautical Research Laboratories Department of Defence, Melbourne as yet.

#### 2. Nomenclature:

AWT - All up weight

SL - Sea level

KTS - Knots (1,850 Km/hr)

KTAS - Knots true air speed

KEAS - Knots equivalent air speed

#### 3. Notes:

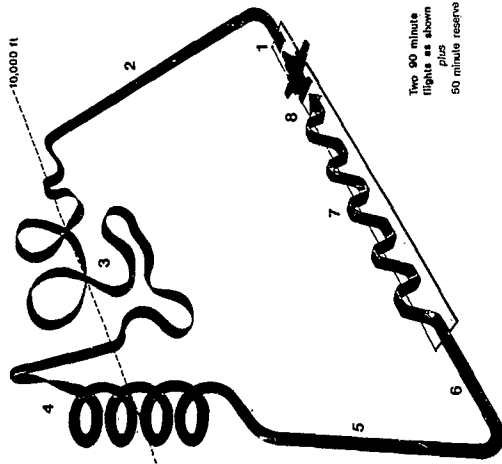
\* - including power flat rated to given altitude.

NA - not applicable or not available.

NM - not met (RAAF AFSR No. 5044 - Basic Trainer Specifications).

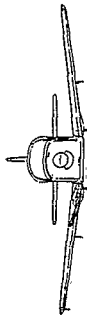
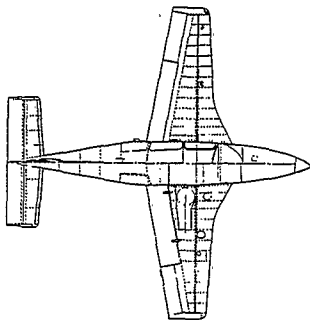
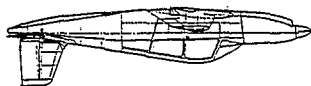
NS - not specified by the RAAF

\* Figures in *italics* and marked thus 79NM mean non compliance with RAAF specifications AFSR No. 5044 (Basic Pilot Training Aircraft)



Two 60 minute  
flights @ 10,000 ft  
plus  
50 minute reserve

1	2	3	4	5	6	7	8
START	CLIMB	MAX PERFORMANCE	STALL	DESCENT	LEVEL	CIRCUIT	TERM
FLY	CRUISE	MANOEUVRE	CLIMB	APPROACH	FLIGHT	START	
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8



**LEADING PARTICULARS**

Construction: All metal  
 Engines: 375 SHP  
 Max. speed: 270 kts  
 Range: 2,115 km  
 Max. altitude: 20,000 ft  
 Max. fuel capacity: 1,200 lbs  
 Max. take-off weight: 1,200 lbs

**MILLTRAINER 375TR/500TR**  
(CT4-GTR)

The CT-4-GTR is a gas-turbine conversion of the CT-4 aircraft, fitted with a Garrett TPE331-1-151 engine, a retractable tricycle landing gear, and a Garrett P/No 2202200 air-cycle air-conditioning system. The engine is flat-rated, at 375 shaft horsepower for training and 500 shaft horsepower for the "expanded role" of AFSR 5044, and will achieve these powers at the RAAF Atmospheric Environment (hottest temperature) to an altitude of 20,000 and 10,000 feet respectively for the training and expanded roles. This aircraft will meet the performance and handling requirements of AFSR 5044 specified except for the landing gear descent velocity, which is ten feet per second and the environmental control cabin "pull-down" time, which could exceed five minutes to reach 27 deg.C wet-bulb from 48 deg.C ambient and unspecified insolation. AFSR 5044 states the objective to be "carrying out pilot training to about 100 hours of total student flying time". The CT-4-GTR would be the most cost-effective trainer to achieve this objective.

**PERFORMANCE**

Trainer role - 375 SHP.:

	AFSR 5044	CT-4-GTR
All-up weight max.	2000 Kg.	1356 Kg. (with 700 lbs. fuel)
Manoeuvre	+6 -3G	+6 -3G
Sustained G at 10,000 ft.	2.5	2.55
Cruise speed at sea level	150 KCAS +	207 KCAS
Time to 10,000 ft. from brake release	6 mins. max.	4.6 mins.
Ceiling at 200 fpm ROC.	20,000 ft. +	30,000 ft. +
Stall speed, clean	70 KCAS max.	63 KCAS
Stall speed, configured	55 KCAS max.	51 KCAS
Approach speed	80 KCAS max.	75 KCAS
Takeoff over 50 ft. obstacle	500 M. max.	305 M.
Landing over 50 ft. obstacle	500 M. max.	400 M. (less with reverse)
Minimum cruise speed	120 KCAS max.	120 KCAS

Expanded role - 500 SHP.:

All-up weight with 600 Kg. of external stores	1865 Kg. (with 500 lbs. fuel)
Manoeuvre	+4 -2 G.
Max. level speed with external stores	200 KCAS.
S/L climb with T/O flap and stores	1020 fpm.
S/L climb clean with stores	1700 fpm.
S/L climb after stores release (1265 Kg. AUW)	3250 fpm.
Max. level speed after stores release	220 KCAS
Takeoff over 50 ft. obstacle with stores	610 M.

ooo000ooo

336

"

LIST OF PRODUCTION VEHICLES LOANED TO MILITARY AIRCRAFT MAINTAINANCE COMPARED WITH MILITARY AIRCRAFT AUSTRALIAN MADE MILITARY (IN COMPLETELY REDEVELOPED AND/OR NEW VERSION) AUSTRALIA 1984

AIRCRAFT TYPE	NUMBER OF AIRCRAFT	IMPORTED		LICENSED PRODUCTION IN AUSTRALIA		PRODUCTION IN AUSTRALIA		PILATUS PC7/PC9 WITH PAV TURBOPROP		COST REDUCTION COMPARISONS ASH		10	11
		TOTAL	PER AIRCRAFT	TOTAL	PER AIRCRAFT	PRODUCTION	PER AIRCRAFT	PRODUCTION	PER AIRCRAFT	PRODUCTION	PER AIRCRAFT		
PC-7	69	185.33	1.33	158.68	2.3	50.7	0.7 times (5 + 5)	3.7 times (5 + 5)	\$2.4M	\$115.6M			
PC-7	86	131.27	1.5	105.68	2.2	41.6	2.5 times	3.6 times	\$19.7M	\$14.3M			
PC-9	69	180.5	2.6	147.83	3.4	31.4	4.2 times	5.5 times	\$137.6M	\$34.2M			
PC-9	86	224.58	2.6	181.62	3.3	26.4	4.4 times	5.5 times	\$173.2M	\$32.9M			

MILITARY AUSTRALIAN DESIGN AND MANUFACTURE AIRFRAME ONLY

MILITARY AIRCRAFT COMPLETE	45	-	-	18.3	.466								
AIRCRAFT WITH ALLISON 330 SHIP OR TURBOJET 265 SHIP TURBOPROP	69	-	-	29.1	.421739								
	86	-	-	34.4	.4M								
	45	-	-	27.3	.606								

Note: Cost/units relationship (under respective headings) is in the same ratio as in the table above. As a quick reference it is possible to estimate the cost of a PC-9 with Allison 330 engine as follows: \$137.6M / 5.5 = \$25.0M

When the complete aircraft (including engine) of PC-9 will be produced in Australia, the additional cost of the aircraft will be approximately \$115.6M (based on table 2.2.11 on cit. p.295)

PC-9 PROJECT	
Original	69 trainers (\$1.426M each)
Further	17 additional PC-9 aircraft
	(\$1.426M each)
	116 (\$1.426M each)
Total	86 trainer fleet (\$1.203M ea) \$244.06.2

SOURCES: Above table is based on:

1. The Australian Aerospace Industry: Structure, Performance and Economic Issues Report; Bureau of Industry Economics; AGPS, Canberra.
2. Draft Report of the Inter-Departmental Committee on the Basic Trainer Aircraft project, Feb. 1985 (p.285)
3. Military trainer aircraft costs are based on Cost and Schedule (Financial) Control System (CSFS) established by the Millicent Aircraft Pty. Ltd.
4. Allison Model 330 turboprop prices are approx. \$400,000 each, subject to firm confirmation. These are about \$100,000 cheaper than Pratt and Whitney F404-27 J439 SHIP derived to 250 SHIP turboprop fitted to Pilatus PC-9. Prices are based on direct offers from US turboprop manufacturers.

USMC

APPROVAL CODE  
34

APPROPRIATE COMMANDS TO BE ADVISED BY THIS REPORT  
OF THE RESULTS OF THIS EVALUATION  
FOR THE PERFORMER'S FILE

1	2	3	4	5	6	7	8	9	10	11	12
Trainer	Training Hours	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer

**GENERAL PURPOSE TRAINING (GPT)**

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-9	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3
CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-8	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3
CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-7	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

**INDEX**

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-6	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3
CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-5	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

WOOFER'S 3144

**TABLE II**

APPENDIX PAGE 11  
S.M.

**GENERAL PURPOSE TRAINING (GPT)**

Trainer	Training Hours	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer
---------	----------------	-------------------------	---------	-------------------------	---------	-------------------------	---------	-------------------------	---------	-------------------------	---------

**GENERAL PURPOSE TRAINING (GPT)**

Militarist CT-4	60	21,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
Militarist MC-316-4	30	10,500	175000	58	58	1,150,000	38,333	38,333	38,333	38,333	38,333
INDEX	90	31,500	525000	233	233	4,650,000	51,667	51,667	51,667	51,667	51,667
CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-3	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3
CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-2	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

63

**GENERAL PURPOSE TRAINING (GPT)**

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-1	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3
CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

Trainer	Training Hours	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer	Cost per Trainee (Cost)	Trainer
---------	----------------	-------------------------	---------	-------------------------	---------	-------------------------	---------	-------------------------	---------	-------------------------	---------

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3
CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

INDEX

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

**GENERAL PURPOSE TRAINING (GPT)**

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

CT-4	40	14,000	101125	345	345	34,500	862.5	862.5	862.5	862.5	862.5
MC-316-0	20	7,000	350000	175	175	3,500,000	175,000	175,000	175,000	175,000	175,000
INDEX	60	21,000	381125	520	520	38,000	633.3	633.3	633.3	633.3	633.3

# Equipment buyers off target

HEARTY, even in his appeal to the "London" Prime Minister, Bob Hawke called on Australia to "Buy Australian". His message was based on the eminently sensible premise that to do so guarantees employment, improves our industrial capabilities and keeps the money here.

But despite the obvious advantages of an increased self-reliance and availability in time of need if equipment is made in Australia, this message has long fallen on deaf ears within the Department of Defence which continually passes over the local product in favour of the gleaming monies from overseas.

At last count, we had weapons either bought or on order from America, Switzerland, France, Britain, Holland, Austria, Sweden, Germany and even New Zealand - with a whisper that we might even have recently looked at South Africa for some artillery detonators.

The attractions are obvious. No subsidies, none of the hassles of research and development. No design worries or up-front investment. No union problems. Lots of lovely overseas fact-finding trips. And despite the fact that, according to the last Parliamentary Public Accounts Committee report on the subject, Defence usually bought badly, it was cheaper - at least until the Australian dollar became the Pacific peso.

And each supplier has solemnly promised that it won't stop the flow of spares or ammunition if it doesn't approve of the particular war its weapons are used in - such as Sweden did with the Carl Gustav anti-tank weapon and the Swiss with their Piatius aircraft during Vietnam.

## DEFENCE - PETER YOUNG

It is a philosophy that has even been extended into items such as ammunition - with Minister Kim Beazley "blithely ignoring the lessons of history by saying that he could whole up new technology bombs for the P-111s by simply placing a call to the suppliers in the United States. The fact that the Americans might be reluctant to let them go in the face of a common threat or that an enemy might make delivery difficult seems to have escaped him.

But surprise, surprise, the Minister's views are endorsed by Mr Dibb in the Dibb report. Mr Dibb cleverly sidestepped his terms of reference which called on him to look for "ways

trainer for the RAAF, that second is Project Water - three now abandoned programs to come up with an Australian-designed, and built armoured personnel carrier (APC). The whole history of the air force trainer is a sorry record of waste and delay with four years and almost \$70 million of public money going down the drain before the department moved the goalposts and decided to buy an off-the-shelf model from Switzerland - the PC-9.

They went ahead with the decision against the express wishes of the air force which will have to completely re-evaluate its pilot training. The air force will also now be left with

## Local products passed over for flashier models

in which Australia's defence industry capacities should be enhanced" by advising industry to contain itself with repair and maintenance work.

A repeat of World War II when we made a broad range of defence equipment ourselves, he says, is no longer feasible and would be counter to world-wide commercial trends. Yet, everybody else seems to be successfully selling to us.

But if the Defence Department is to listen to Mr Hawke's positive appeals rather than the disincanties put forward by Mr Dibb, there are two areas where they could begin right now - and save a lot of money in the process. The first is the new

three trainer aircraft types instead of two. This is because the PC-9 is too powerful for beginners and the C74 - the aircraft the PC-9 was supposed to replace in the first place - will have to be retained in the basic trainer role.

More importantly, the PC-9 will be bought against the Swiss Franco - one of the hardest currencies in the world - despite the fact that a local currency says it could provide an Australian-designed and manufactured aircraft capable of the same performance at a fraction of the cost.

The second comes from Henry's kitchen, the mar-who originally designed the C74. But his offer has been rejected

by the department despite the fact that the last time they ignored his advice and allowed him to sell his design overseas, they were later forced into the embarrassing situation of having to purchase it back from New Zealand.

It is much the same situation with Project Water. Despite the obvious need for some form of APC or mechanized infantry combat, while needed to allow troops to face the vast and inhospitable terrain and climate of continental Australia - and despite the fact that industry responded with exactly the sort of enthusiasm and excellence called for by Mr Hawke, the whole project was eventually cancelled.

There are many other examples, such as the Newcastle engineering firm whose revolutionary new transmission system was passed over, and the local small arms manufacturers which weren't even given the courtesy of having their equipment tested in the rush to buy overseas.

It's not all bad, of course. The response of industry to the challenge of the Oberon replacement submarine program and the performance of some of our high-tech electronic companies are examples of what can be done if they are given a fair go. And to be fair, every item purchased overseas by the Government now carries a mandatory high local workload and technology transfer content.

No one would disagree that our forces deserve the very best equipment available, but local industry could match much of the overseas equipment if given the chance. And it is here, in defence procurement, that Mr Hawke could call for a firm example to be set - an example which would benefit Australians.

## COMPARED WITH

### PILATUS PC-9

	SPITFIRE MK1	
Weight, normal	<del>2420</del>	<del>2420</del>
Weight, overload, ext fuel	-	5,780 lb
Wing area	242 sq. ft	175 sq. ft
Wing loading	24 lb/sq.ft	28.4
Maximum horsepower	1,050	1,150
Power plant weight	2,020 lb	450
Maximum speed, KTAS	315/ <del>302</del>	<del>315</del>
Maximum rate of climb	2,500 ft/min	4,000 ft/min
Time to 20,000 ft	9.4 min	NA
Weight of fire/sec	4.0 lb	NA
Fuel capacity, internal, lbs	610/85 gal	793
Maximum range, N.M.	500/575 gal	600
Rate of roll at 400 mph	14.0 degrees/sec	90 deg/sec @ 170K
Permissible CG range, percentage mean chord	2.7	NA
Factored wing loading	240 lb/sq.ft	300 lb/sq.ft
Maximum diving speed	<del>330</del>	<del>330</del>
Structure weight, per cent	33.0	NA
Energy absorption of undercarriage	8,300 ft/lb	NA
Undercarriage stroke	4.9 in	NA
Stall speed, F.O. *F 60° KEAS	69/61	79/70

Note: Subsequent Seafire 47 weighed 12,500 lbsa this weight is the equivalent of a Spitfire Mk I carrying 32 airline passengers each with 40lb of baggage.

Source: \*The Spitfire; G. Quill; November 1982, Appendix 10; p.304  
\*Pilatius PC-9 Brochures, 1986

AIDE-MEMOIRE

RAAF'S BASIC PILOT TRAINER PROGRAMME

(AFSR 5044)

FATIGUE TESTS ISSUES

"NOMAD"

"Nomad aircraft FULL-SCALE FATIGUE TESTS by Government Aircraft Factories received some sponsorship from the Department of Defence partly as an Aeronautical Research Laboratories, Melbourne:

- \* basic research project and
- \* PARTLY to FULFILL AUSTRALIA'S OBLIGATIONS TO OTHER COUNTRIES AS THE PRIME CERTIFICATION FOR THE AIRCRAFT".

Source: BIE: Research Report No 20; AGPS: Canberra, March 1986, p.147.

- Q1 Why then the Swiss "obligations to Australia" contract is not based on "full scale fatigue tests" as a "prime certification authority" for the PC-9 fatigue capability?

"WAMIRA"

Aeronautical Research Laboratories (ARL) were fully involved in fatigue terms associated with the "Wamira" Basic Trainer Programme.

BIE: Report No.20; op.cit. p.159 states:

"In this programme ARL was an advisor to the RAAF and the sub-contractor to the AAC (Australian Aircraft Consortium). ARL CONTRIBUTED TO FATIGUE LIFE ASSESSMENT OF THE PLANE AND TO AERODYNAMICS PERFORMANCE

ASSESSMENT

- Q2 Why was not PC-9 FATIGUE LIFE ASSESSED BY THE ARL in similar manner to "Nomad" and "Wamira"?

DR MILICER DESIGNED RAAF'S CT-4

Was most extensively and exhaustively fatigue tested by the ARL over a period of some years.

Results of fatigue life tests were phenomenal:

- \* 51,000 fatigue life hours achieved which means: approximately 12,000/12,500 operational service hours.

- Q3 PC-9 ACTUAL FATIGUE LIFE QUERY

It has been said that PC-9 airframe target life is 10,000hrs or L.O.T. of 20 years

However the PC-9:

- (i) has not been proven in service. Only 2 (two) flying prototypes were constructed at the time of discussions with the Australian Government and the PC-9 flew only about 100 (one hundred) hours.

Incidentally CT4's designed by Dr Milicer achieved some 300,000 hours in the air, 420,000 take-offs and landings and are now flying with the RAAF.

PC-9 has not been selected as the Swiss Air Force Trainer.

- (ii) The RAF Jet Provost, with similar design to the PC-9 wing pick-up points, proved to be operational for only 4,000 flying hours.



3.

- (iii) Even prior to delivery of the 1st PC-9 to the RAAF BIE Report No.20 stated on p.195 that the PC-9 has "Somewhat shorter fatigue life".

Q4 OVER THE BUDGET COSTS

How could then, the Commonwealth Government invest \$284.06 million funds for 86 PC-9 trainer aircraft instead of the required 69, and with the officially stated reputation of "somewhat short fatigue lives" even prior to the RAAF evaluation flying programme?

Q5 HOW SHORT IS "SHORT FATIGUE LIFE"?

It is obvious now that the lack of fatigue tests results in the unnecessary additional costs to the Commonwealth of \$46.83m arising out of forced purchases of extra 17 (seventeen) PC-9's thus:

- (i) it increases RAAF trainer fleet from required 69 aircraft to non-planned number of 86 trainers;
- (ii) forces the RAAF to have 3 (three) trainer fleets (CT-4, PC-9 and Macchi) instead of 2 (two) namely Milltrainer and Macchi only.
- (iii) inflicted on the taxpayer an unwarranted cost of additional \$46.83 million or SUFFICIENT FUNDS TO PURCHASE 69 (sixty-nine) MILLTRAINERS WITH AN ADDED AVIONICS BONUS;
- (iv) Who was in fact responsible for the uncritical and the inaccurate acceptance of the estimate

4.

of the PC-9 fatigue life data?

- (v) It has been said that some 11 (eleven) delegation flew to Stans, Switzerland. Nobody obviously made an informed inquiry about the fundamental issue such as the fatigue life of a \$3.3 million a piece trainer?

Q6 Who in actual fact induced the Australian Government to invest \$284.63m in untested (test flights are not completed yet) trainer which misses on some 6 (six) AFSR 5044 requirements (Ref. Millicer Aircraft Brochure pp.8-9)?

Q7 If fatigue life tests for PC-9 were considered of trivial importance why then the ARL spend a fortune in time and funds to fatigue test:

- \* NOMAD
- \* WAMIRA
- \* MILLICER DESIGNED CT4

If fatigue tests are considered of no consequence for PC-9 why then Hawker de Havilland's are testing presently via CAC, the Macchi-MB326H for airframe fatigue incidence (cost about \$2m).

Other Associated Issues

Published Commonwealth reports provide up to-date insight into Basic Pilot Trainer Aircraft Project. The interesting aspect of these reports is that the absence of reliable information, ability to develop an acceptable

time frame and control resulted in cost overruns around \$70m, schedule slippages.

Thus the issue is what safeguards have been taken to avoid repetition of "Wamira" financial disasters, cost overruns and time slippages, in the context of PC-9.

Reports are examined in chronological order:

1. Report of the Auditor-General upon Audits Examinations and Inspections under the Audit and other Acts, April 1985, Auditor's General Office, Canberra, ACT states:

- 6.1.1 p.11: "Commonwealth (represented by the
  - . Government Aircraft Factories) should join
  - . Commonwealth Aircraft Corporation Pty Ltd,
 and
  - . Hawker de Havilland Australia Pty Ltd,
 to form the: AUSTRALIAN AIRCRAFT CONSORTIUM PTY LTD.
 

On June 1982 AAC was contracted to carry out the design and development of the Basic Trainer (Phase 2) at the cost of \$146 million (August 1981 prices) ".....

"The new basic trainer aircraft, to be known as "Wamira", will be a turbo-propeller, low winged monoplane with retractable undercarriage and side-by-side seating.

Sixty-nine (69) aircraft are required to provide a fleet life of 20 years, allowing for attrition losses."

- p.12: . "At October the total project cost was estimated at \$281 million (compared with \$155 million at August 1981 prices).
- . Phase 2 costs had increased from \$46 million at August prices to \$64.4 million at October 1984 prices."

It emerges therefore:

- . Estimated cost per trainer \$4.07 million.
- . Total cost of \$281 million very close to Pilatus PC-9 order of \$284.06 million (for 86 aircraft, instead of required 69 machines), on account of fatigue life limitations of the Swiss trainer.

After some \$64.4 million were spent on the "Wamira" project:

- . THERE WAS NO PROTOTYPE - thus no "Wamira" ever took to air whilst Phase 2 stated (p.11), "This (phase) covers the design, development and testing of the prototypes. The project WAS AT THIS PHASE AT THE TIME OF AUDIT (December, 1984)".

- p.12: "Audit revealed that there was a lack of firm financial information relating to the Australian design, development and production of a trainer aircraft at the time of project approval and this could have impacted upon consideration of other options."
- p.13: "Departmental records also disclosed that in September 1983 the project WAS BEHIND SCHEDULE IN

TERMS OF BOTH EXPENDITURE AND TECHNICAL ACHIEVEMENTS AND THERE WAS LITTLE CHANCE OF RECOVERY. AUDIT QUESTIONED WHY DETAILS OF THESE SLIPPAGES WERE NOT ADVISED IN THE DEPARTMENTAL SUBMISSION ON 18TH OCTOBER 1983 SEEKING INCREASED FUNDS."

- p.14: "It was INDUSTRY'S INEXPERIENCE AND HENCE REDUCED COMPETENCE LEVEL that have contributed mostly to cost overruns and schedule slippage."
- p.16: "Audit concluded that the evaluation of Australian industry's ability to undertake the project has proven to be overly optimistic and that initial projections of costs, timing and technical risks were inaccurate resulting in cost increases and project slippages."
- p.17: "Slow progress towards design completion was identified by the Department in November 1983. When AAC WAS UNABLE TO PRESENT MAJOR PORTIONS OF THE AIRCRAFT MOCKUP FOR REVIEW. At that time the project was reconstructed to help overcome slippages, but OUTSTANDING DESIGN DIFFICULTIES PREVENTED ANY SCHEDULE RECOVERY."  
The MEASUREMENT OF ACHIEVEMENT OF THE PROJECT HAS NOT BEEN EASILY DISCERNIBLE BECAUSE WORK REMAINING COULD NOT ALWAYS BE IDENTIFIED AND MEASURED."
- p.17: "The significant cost overruns and slippages in the project stem from initial project considerations

where project costs and EVALUATION OF INDUSTRY'S ABILITY TO UNDERTAKE THE TASKS WERE SIGNIFICANTLY UNDERESTIMATED."

It is fair to remark that no tenders were called for the Basic Pilot Trainer Aircraft Project in Australia, but foreign firms bids were sought.

. The Australian Aerospace Industry : Structure, Performance and Economic Issues, Research Report No. 20; Bureau of Industry Economics, AGPS, Canberra, 1986 adds some significant facts to the Auditor's General remarks.

- p.13 "Prospects for complete production of manned aircraft in the near future have diminished with the cancellation of the "Wamira" trainer aircraft. The programme had been in doubt for some time. (Trainer Aircraft in doubt, 1985 Cranston, 1985d; Hawker de Havilland fight back..... 1985, but was finally cancelled on 16 December 1985 expiry of funding on 31 December 1985. The Swiss Pilatus was selected as the RAAF trainer." Notwithstanding a series of disastrous failing of "Wamira" project Report No. 20, opp.cit says:
- p.14 "The Commonwealth Aircraft Corporation and Hawker de Havilland OBTAINED ABOUT TWO-THIRDS AND ABOUT FIFTY PERCENT OF THEIR RESPECTIVE SALES FROM GOVERNMENT CONTRACTS."

- p.17 "(in) 1985 Hawker de Havilland and the Commonwealth Aircraft merged."
- p.31 "Many of the larger firms are subsidiaries of overseas aerospace firms most PARTICULARLY HAWKER DE HAVILLAND (70 PERCENT OWNED BY THE UK PARENT, British Aerospace)" etc.....
- p.41 The structure of the industry, which has been largely static since the RATIONALISATION OF HAWKER DE HAVILLAND FACILITIES, FOLLOWING THE IAC INQUIRY INTO THE INDUSTRY IN 1975, HAS RECENTLY BEEN TRANSFORMED BY THE MERGER BETWEEN THE TWO LARGEST PRIVATE AEROSPACE MANUFACTURING FIRMS: THE COMMONWEALTH AIRCRAFT CORPORATION AND HAWKER DE HAVILLAND. CURRENTLY THESE TWO FIRMS HAVE JOINT SALES OF ABOUT \$160 million and total employment of 3,350 PEOPLE." Report No. 20 did not mention that 70% of the profits on \$160 million turnover obviously were repatriated to England.
- p.48 Distribution of depot level maintenance workload for the RAAF, Australia, 1984-85 was:
- |                                   |      |
|-----------------------------------|------|
| Commonwealth Aircraft Corporation | 15.0 |
| Hawker de Havilland               | 14.8 |
- or practically one-third (29.8%) of Australian aerospace industry is now in foreign hands.
- Example:
- p.49 Hawker de Havilland with 117,000 man hours provided

- 49.8% of the workload for the RAN, Australia, 1984-85. No other tenders were called by the RAN. So in fact Australia is not only dependent on overseas for aerospace supplies, but encouraged foreign firms to "rationalise" by buying out Australian aircraft companies (CAC) and increasing overseas control of what remained of Australian aerospace capabilities.
- How then we can justify such a the situation whilst:
- p.57 "According to a government sub-committee report on costing published in 1985, the DESIGN, DEVELOPMENT AND PRODUCTION INVESTMENT COSTS OF THE AUSTRALIAN AIRCRAFT CONSORTIUM'S "WAMIRA" AIRCRAFT (ATO BASIC TRAINER) AMOUNTED TO \$169.5 MILLION or 45 PERCENT OF A TOTAL ESTIMATED PROJECT COST (EXCLUDING SPARES) OF \$373.1 MILLION FOR 69 AIRCRAFT". The particularly high launching costs associated with "Wamira" REFLECT THE INEXPERIENCE OF THE AUSTRALIAN AEROSPACE INDUSTRY WHEN WORKING WITH MILITARY SPECIFICATIONS.
- p.57 "This comment does not apply to the Government Aircraft Factories which have a substantial and development expertise, and who WERE ABLE TO COMPLETE THEIR DESIGN AND DEVELOPMENT TASKS ON THE "WAMIRA" SOME 12 PERCENT UNDER THE QUOTED MANHOURS."
- p.59 "COST OF DESIGN/DEVELOPMENT OF A NEW AIRCRAFT MAY BE REDUCED THROUGH EXPERIENCE OF PREVIOUS PROJECTS.

IT HAS PROBABLY BEEN SUCH LACK OF EXPERIENCE WHICH HAS especially with the AUSTRALIAN AIRCRAFT CONSORTIUM, COMMONWEALTH AIRCRAFT CORPORATION AND HAWKER DE HAVILLAND WHICH HAS LED TO THE HIGH DEVELOPMENT COST OF THE "WAMIRA".

p.15 It must be noted that the last airframe

Table 2.2.1 De Havilland produced was the tri-engine "Drover" in 1946.

Cynics used to say that the Drover could not take-off on two engines, and hardly could fly on three motors it had.

Notwithstanding of "Wamira" financial calamity:

p.97 "The pronounced government role in investment in the aerospace industry is notable..

It is estimated that over 20 percent of TOTAL INDUSTRY CAPITAL STOCK WAS OWNED BY GOVERNMENT IN 1982-83. To some extent this involvement is dictated by Government ownership of a major aerospace enterprise, about half of government capital stock resided with the Government Aircraft Factories. The remaining (50%) MAINLY RESIDED WITH THE PRIVATE FIRMS HAWKER DE HAVILLAND and the COMMONWEALTH AIRCRAFT CORPORATION."

p.97 "Investment DATA EXCLUDES CAPITALISED LEASING AND

Table 4.4.2 CAPITAL ASSETS OWNED BY THE GOVERNMENT."

Note: b

p.101 "Profits and Profitability in the major private  
Table 4.5.2 aircraft manufacturing firms, Australia 1974-75 to 1982-83" table indicates strong symbiosis (which could be of course coincidental) between Government horrid losses on "Wamira" project and Hawker de Havilland phenomenal profitability after a 1974-78 loss run.

p.124 "The RAAF LAID DOWN A SPECIFICATION FOR A TRAINER, called AFSR 5044 which called for:

- . SIDE-BY-SIDE SEATING
- . LONG FATIGUE LIFE, and
- . SUPERIOR PERFORMANCE.

It has been claimed by several industry members that RAAF specifications involved "gold plating", that is excessive specifications were set which inevitably led to very high costs."

All above can be well provided by Australian constructed Milltrainer 375TR turboprop.

p.145 "Following delays, costs overruns and difficulties in project management (Auditor's General Office, Report, 1985) the programme was increasingly questioned by RAAF.

IN 1985, HAWKER DE HAVILLAND PURCHASED THE GOVERNMENT AIRCRAFT FACTORIES' SHARE IN THE PROJECT, INTRODUCED CHANGES IN SPECIFICATIONS AND OFFERED FIXED PRICE CONTRACT ON THE 69 PROPOSED AIRCRAFT."

No purchase price was stated.

Thus Hawker de Havilland acquired not only the project by the extensive range of parts, jigs, special tools etc. eminently suitable for light aircraft manufacture, as well as all parts of "Wamira" aircraft including the fuselage, wing, undercarriage, flying controls etc. Australian Government investment in the project of about \$70m were handed over at a nominal price to a foreign multinational.

The sad sequel to "Wamira" was the static test of the wing at the University of NSW.

It failed and wing distorted. It has been said that structural modification to the wing spar would add about 11 percent to the trainer's weight whilst it already weighed 5,050 lbs and was well above RAAF's AFSR 5044 maximum all up weight (AUW) aerobatic lbs of 4,410 by 14.51 percent.

p.145 However, "funding for the program expired on 31 December 1985 and a government decision was made to procure Swiss Pilatus PC-9 trainers (with tandem rather than side-by-side seating arrangement) as the RAAF basic trainer aircraft".

p.268 "Direct Funding of the Aerospace Industry"  
8.4 The Australian aerospace industry was the recipient of over \$100 million of direct funding in 1983, most of which was channelled to one enterprise, the Government Aircraft Factories, with bulk of the remainder allocated to the two prominent private

firms the Commonwealth Aircraft Corporation and Hawker de Havilland."

8.4.1 Maintenance of Production Capability Payments (MPC)

"Three firms engaged in aerospace activities are recipients of MPC payments:

- . Hawker de Havilland
- . Commonwealth Aircraft Corporation, and the
- . Government Aircraft Corporation."

p.270 Table 8.4.2; Maintenance of Production Capability Payments to the Aerospace Industry, 1970-71 to 1980-84 CM 1979-80 Constant Prices.

	COMMONWEALTH AIRCRAFT CORPORATION	HAWKER de HAVILLAND
1975-76	8.4 million	3.9
76-77	8.7	5.1
77-78	6.9	5.6
78-79	5.8	5.7
79-80	5.3	4.7
80-81	4.3	4.6
81-82	3.4	4.0
82-83	4.5	4.4
83-84	3.7	3.8

Thus it is not surprising that subsidised industry, after disastrous failure of "Wamira", presumably under guidelines from their overseas boards, propounds the notion:

p.247 "It is possible that the best strategy would be to predominantly purchase aerospace goods overseas at prices subsidized by other governments."

Of course fatigue life of PC-9 blunder does not indicate that the Swiss Government is paying for it. Extra cost of 17 aircraft (increase from 69 to 86) forced Australian

taxpayer to pay out \$46.83 million over and above the cost of 69 trainers originally considered by the RAAF. The logical outcome of the reliance on "prices subsidized by other governments" is:

p.265 "Other option which might offer the prospect of improved performance is PRIVATISATION.

Given that the other major aerospace enterprise Hawker de Havilland/Commonwealth Aircraft Corporation is wholly privately owned and with a large overseas interest there APPEAR TO BE LITTLE STRATEGIC BASIS FOR THE CURRENT OWNERSHIP STATUS OF THE GOVERNMENT AIRCRAFT FACTORIES. CLEARLY PRIVATISATION PROVIDES GREATER AUTONOMY OF MANAGEMENT AND INCREASES FLEXIBILITY."

. It seems obvious that if one is 70% owned by overseas interest there is little degree of autonomy of management and arising therefrom flexibility.

It was not surprising-however to learn from the Joint Committee of Public Accounts:

p.149 "Because of schedule slippages and escalating costs in the design and development of the "Wamira" the Government decided in July 1985 to reduce work on "Wamira" and invite tenders from two overseas manufacturers and Hawker de Havilland Australia which in August 1985 TOOK OVER the AAC and the MANAGEMENT OF THE "WAMIRA"

DESIGN AND DEVELOPMENT.

TENDERS WHICH CLOSED ON 16 SEPTEMBER 1985 were received from:

- . Hawker de Havilland, and
- . Pilatus of Switzerland."

This Statement is not completely correct as Millicer Aircraft made an "unsolicited" firm telex offer on 13 and 14 September 1985.

p.149 "On 16 December 1985 the Government announced its decision to acquire the Pilatus PC-9 aircraft.

8.12 Sixty-nine aircraft would be built in Australia under licence with production commencing in mid-1986 and continuing into the 1990's.

Hawker de Havilland WAS EXPECTED TO BE PRIME CONTRACTOR FOR THE MANUFACTURE OF THE PC-9."

p.149 8.13 The RAAF formulated demanding performance, durability and maintenance requirements for its new basic trainer. The RAAF wanted:

- (i) a trainer aircraft which more closely met the needs of its undergraduate pilot training concept;
- (ii) an aircraft with a long service life and a low total life time cost;
- (iii) an aircraft with an expandable role capability, for example, as a forward air control aircraft; and a project which would

17.

- (iv) equip the Australian aerospace industry with an advanced design capability, and
- (v) offer good prospects for follow-on orders from overseas sales. (2)

2. Minutes of Evidence, op cit, pages 1427-8.  
Department of Defence, Air Force Staff Target S044, dated 25 May 1979, Annex A.  
Department of Defence, Air Force Staff Requirement 5044, dated 22 October 1979, Annex A.

p.150 8.14 "The RAAF initially required 64 (later revised to 69) aircraft to be delivered from mid 1986 when the "life of type" of the existing CT-4 trainer was then expected to be reached. The life of type of the CT-4 has since been revised to 1990." (3)

3. Department of Defence, Major Equipment Proposal, Project Air 5044, 23 October 1978, paragraphs 8,12,14-16,29.  
Minutes of Evidence, op cit, page 1426.

Q8 It would be interesting to learn why, in the PC-9 context (consecutive numbers refer to 8.13 p.149):

- (i) PC-9 does not meet closely the needs of the undergraduate pilot training concept. IT CANNOT CATER FOR THE PRIMARY TRAINING PHASE (40 - 60 hrs. of ab initio flying).
- (ii) There are already doubts about "long service life".

18.

PC-9 original order of 69 trainers HAS BEEN INCREASED TO 86 trainers at the cost of \$46.83 million on ACCOUNT OF SOMEWHAT SHORTER FATIGUE LIVES OF PC-9's.

- (iii) . PC-9 expandable role capability is available, but its short mission duration of 2 hours and 20 minutes is well below AFSR 5044 standard. Miltrainer 375TR/500TR can achieve 3 hours and 50 minutes.
- . Tandem seating does not comply with AFSR 5044 which calls for side-by-side configuration.
- . PC-9 had no grass landing capability.
- (iv) Pilatus Representative in Australia stated:
  - . All PC-9 modifications carried out to meet RAAF requirements will be carried out by Pilatus, Stans, Switzerland.
  - . Some undercarriage work will be done jointly by Pilatus/Hawker de Havilland.
  - . Hawker de Havilland will be the prime contractor.
  - . Final beneficiaries will be:
    - . both Hawker Siddley, UK, and
    - . Pilatus Flugzeugwerke A.G. Stans, Switzerland (subsidiary of: Swiss Oerlikon-Buhrle Armament Group)

Q9 How then the thesis of "equipping the Australian aerospace industry with an advanced design capability" will look in



## practice:

- . advanced design work: 100% done in Switzerland and thus all profits in this most important area will accrue 100% to Swiss;
- . some design work will be done on the undercarriage by Hawker de Havilland. In this case profits will be again repatriated overseas (UK).

Q10 Export Potential Limitations

PC-9 will cost about \$3.3 a piece, therefore "good prospects for follow-on orders from overseas sales" are indeed limited:

- (a) Capital cost of PC-9 is approximately \$3.4m (Table "F"). This is 5.7 more expensive than the Milltrainer 375TR/500TR.
- (b) Pursuance of export objectives at high unit price levels will most likely necessitate Australian Government subsidies:

\*\*Wamira's" design, development and completion of one.

(1) non-flying prototype required the degree of assistance to be raised to \$155M (August 1981 prices) (Ref. Report No. 273, Joint Committee of Public Accounts: AGPS; Canberra, 1986; \* 15; p.150).

The high capital cost of development can be illustrated by the fact that:

- . \*\*Wamira" project (now defunct) was run (abt. 66.6%) by the Hawker de Havilland.

It proved that the costs:

Phase I        \$ 4.3M

Phase II        \$64.4M were well above the estimates  
\*(Auditor-General's Report p.13)

- . Time scale slippages were in some cases in excess of 21 months with the corresponding cost impact.
- . PC-9 project may have identical problems.
- . The relatively high unit costs, combined with exceptionally high AOW of 5,050 lbs or 1.7 times heavier than Milltrainer at 2,990 lbs, and expensive 600 SHP turboprop about (\$300,000 v Milltrainer's engine at \$200,000) gave rather a scant account of its suitability to the other air forces.

Further it does not offer a wide export scope on account of mission of limitations (sortie endurance):

- . PC-9 with 950 SHP gas turbine, AOW of 4,982 lbs, is also abt 1.7 times heavier than the Milltrainer. Its engine is in the power range of WORLD WAR II SPITFIRE Mk. 1.
- . Obviously the weight and the high SHP result in rather unfavourable cost-schedules.

Q11 Will PC-9 exports be subsidised by Australian Government? It appears that impediments to PC-9 exports will be rather similar to that of "Wamira", unless subsidised by the Australian Government.

As an example:

- . "Nomad" required Australian Government production subsidies as follows:

\*Total subsidies:                                \$119.6 million

21.

\*1975-76 assistance \$1.8M per aircraft  
1983-84 assistance \$.801M per aircraft  
Ref. B.I.E. Report No. 2; AGPS, Canberra, 1986; Table  
8.4.3.; p.276.

Above excludes ARL costs.

The Miltrainer at the price of \$.6M per aircraft offers much more substantial chance of export sales. These will not only defray some further design and development costs but also allow for substantial future purely Australian research and development and extension of existing design capabilities.

In the Miltrainer case aircraft design expertise will augment objectives of high performance, cost effectiveness, development of further design capabilities and export marketability.

Q12 MILLICER AIRCRAFT OFFERS DISREGARDED

Thus, it appears rather unusual that:

- (i) Millicer Aircraft firm offer to the RAAF (telexes 11th and 13th September 1985) did not bring any response whilst it was officially announced that the CT4 airframe test, by the ARL, achieved 51,000 fatigue life hours; and
- (ii) It was obvious, that the CT4 designed originally by Dr Millicer, with some 300,000 hours of training flying, about 420,000 landings and take-offs, without a fatal accident, was an admirable trainer. It seemed

22.

logical that if re-designed by Dr Millicer it could yield technical excellence and unmatched cost-effectiveness at the price levels 5.5 times cheaper than the Pilatus PC-9.

JOINT COMMITTEE OF PUBLIC ACCOUNTS FINDINGS

By some extraordinary circumstances no record could be found of Millicer Aircraft offer to the RAAF by the Joint Committee of Public Accounts (No.243, March 1986). However, the Review of Defence Project Management Vol.2; Project Analyses; Report 243; Joint Committee of Public Accounts; Parliament of the Commonwealth of Australia; AGPS; Canberra March 1986; states that the ONLY EVIDENCE OF MILLICER AIRCRAFT SUBMISSION WAS A NEWSPAPER ARTICLE which presumably attracted the attention of the members of the Joint Committee. (p.153):

"OTHER COST SAVING TRAINING OPTIONS"

8.26 the Committee has NOT SEEN THE REPORT OF THE REVIEW OF THE RAAF'S TRAINING PHILOSOPHY. It is surprised, however, that a REVIEW OF RAAF UNDERGRADUATE PILOT TRAINING CONCEPTS WAS NOT UNDERTAKEN AT THE COMMENCEMENT OF PROJECT DEFINITION.

8.27 THE COMMITTEE IS UNABLE TO FIND IN THE PROJECT RECORDS ANY ANALYSIS OF ALTERNATIVES TO A NEW AIRCRAFT ACQUISITION.

The designer of the CT4 aircraft has been reported as stating that the airframe and wings of the CT4 has a long remaining life and the airframe could be upgraded (by

installation of a new engine and re-design the tail plane) to meet the RAAF's basic trainer aircraft performance requirements for about \$400,000 each. THE OPTION DOES NOT APPEAR TO HAVE BEEN EXPLICITLY CONSIDERED WHEN THE GOVERNMENT RE-STRUCTURED THE BASIC TRAINER PROJECT IN JULY 1985"

REFERENCES: Final Report to Force Structure Committee, op.cit., paragraphs 11-12.

ibid., paragraph 2(b), second part.

Department of Defence, Minutes of Force Structure Committee Meeting, 31 March 1981, paragraph 29.

Minutes of Evidence, op.cit., pages 1462-3.

"RAAF should Recycle Jet Trainer" Australain  
9 September 1985.

Q13 "WAMIRA" VERSUS PC-9 REQUIREMENTS

Why was Wamira project required to produce 33 (thirty three) reports on all modifications.

How then presumably identical method of reporting on the PC-9 seemingly missed that the PC-9 trainer:

- \* requires additional 11,000 man hours to carry out re-design of PC-9 airframe to comply with some AFSR 5044 standards.

Q14 PC-9 NON-COMPLIANCE WITH AFSR 5044:

- \* is not within AUW (all up weight) limits
- \* tandem seating is not in accordance with RAAF's needs

- \* has no grass landing capability and thus-
- \* must have a re-designed wing to take heavier landing gear (grass fields landing capability). This may in turn affect fatigue life of the trainer.
- \* exceeds all stall speeds limits
- \* has a limited sortie capability (2hrs 20mins)
- \* is a trainer which CANNOT PROVIDE PRIMARY PILOTAGE TRAINING IN FIRST 40-60 HRS OF pilot's tuition.
- \* to provide better pilot safety, a specially enhanced stall warning system will have to be eventually provided.
- \* forced RAAF to be COMMITTED TO THREE (3) TYPES OF TRAINER FLEETS INSTEAD OF TWO (2).
  - (i) Primary (CT4); and
  - (ii) Basic and advanced trainer (PC-9)
  - (iii) Macchi M-326-B jet

Q15 Who forced on the RAAF "tandem seating" whilst RAAF wanted a "side-by-side" cockpit?

Q16 Why were no tenders called for PC-9 manufacture in Australia?

Q17 How did the major partners of the disastrous "Wamira" project acquire the monopoly on the PC-9 manufacture without Australia wide tenders being even considered?

Q18 How, in the very difficult balance of payments situation of crises proportions, can Australia afford to:

- \* overlook existing Australian aerospace design capabilities outside foreign companies (Hawker de Havilland and Pilatus) when there is no actual necessity for as the aeronautical skills and manufacturing capabilities are available in Australia through Millicer Aircraft - Transavia facilities.
- \* allow repatriation of most of the profits made on PC-9 either to
  - Switzerland (Pilatus) (100%) or
  - UK (Hawker de Havilland) (70%)

Whilst the Joint Committee of Public Accounts (Report 243), March 1985 said:

- (i) "Industry's (AAC) lack of recent aircraft design experience", 8.5; p.145;
- (ii) "The difficulties which subsequently befell the project were results of RAAF and industry (CAC) inexperience with designing aircraft to military specifications", 8.9; p.148; and
- (iii) "the cost and schedule over-runs were principally the result of the Australian aerospace industry's poor initial estimations and its limited design capability - deficiencies which the department (Defence) attributed to the industry's lack of current

design experience"; 8.21; p.151.

There is thus no guarantee that the PC-9 production line achievements will be superior to those exhibited in the "Wamira" projects.

Q19 EXISTING ALTERNATE DESIGN AND MANUFACTURE OF LIGHT AIRCRAFT CAPABILITIES IN AUSTRALIA NOT CONSIDERED.

There are two (2) firms in Australia which not only designed, but have their aircraft flying in active service around the world:

- \* Transavia - Skyfarmer, Airtruck
- \* Millicer Aircraft - Airtourer, Aircruiser, CT4

There is a little doubt that Dr Henry Millicer is a light aircraft designer of the world renown.

Q20 THE AIR TRAINER FLEET \$284m OVERSEAS EXPENDITURE COST BURDEN AND CT-4 ABSOLESCENCE. WHY NOT CONSIDERED?

Whilst the Auditor-General's Report confirmed the excellence of the Millicer CT4 airframe, it however, issued a warning phrased as follows:

"The Wamira was originally planned for introduction into service in mid-1988 when it was originally estimated that the life of the CT4 would expire. If the present delay of 1 (one) year, increases during the remainder of the project ("Wamira") it may be necessary to incur additional costs to extend the life of the existing trainer aircraft" (p.15) Australian built Pilatus PC-9 may fly in squadron service by 1988. If "Wamira" type delays occur by THAT TIME, USEFUL LIFE OF CT4 MAY EXPIRE".

Source: Report of the Auditor General upon Audits, Examinations and Inspections Under the Audit and other Acts, Auditor General's Office, Canberra, ACT: 16 April 1985 under "Basic Training Aircraft" However CT4 IS ALREADY OBSOLETE AND DOES NOT COMPLY WITH AFSR 5044

Q21 WHY PERSIST WITH CT4 EXISTING PERFORMANCE LIMITATIONS

In present configuration CT4 is subject to following training limitations:

Training Limitations

1. CT4 cruise speed is already too slow for RAAF navigation exercises syllabus. Minimum 3n.m/min is required. This CT4 cannot achieve.
2. As aircraft is fitted with an old engine (out of production in UK) and its climb performance and hence, aerobatic capabilities are rather poor at 10,000 ft.
3. CT4's 210HP 10 360-D engine has a TBO (Time Between Overhauls) of only 1,200 hours. Costs of running an old engine are high. Its overhaul hours compare rather poorly, with the modern turboprops such as Milltrainer's Garrett/Allison with 3,600 hours TBO or 200% longer.
4. Spinning rate, due to misconceived modifications to the original design, is too high. It does little to teach the trainees to spin and recover from the spin correctly.

5. Spin is flat, recovery difficult. Already RAAF DISCONTINUED TEACHING SPINNING TECHNIQUES as students get dizzy and disorientated and do not acquire spinning skills. Now only entry into spin is demonstrated.
6. Canopy jettisoning (to bail out) may be difficult in yaw. Recovery forces are too high on the stick due to very high rate of descent in spin. Thus excessively large height loss.
7. Original canopy was re-designed. It resulted in a very noisy cockpit.
8. Aircraft has an obsolete fixed undercarriage.
9. Is not airconditioned.
10. CT4 does not meet RAAF's AFSR 5044 current requirements for Basic Pilot Training Aircraft and its present fatigue life expires in 3-4 years.

On the other hand, Milltrainer 375TR/500TR can match all RAAF needs. It can provide for all pilot training phases (jet excepted) adequately and cost-efficiently. Its high flying qualities may allow RAAF to reduce existing jet training on Macchi by 25-50% at the capital cost 5.5 times lower than the PC-9. Milltrainer turboprop is \$100,000 a piece cheaper than one used by PC-9. Milltrainer availability, reliability, maintainability and durability as well as standardisation, are at costs well below other military trainers.

SOME REMARKS ABOUT NET EFFECT OF A FOREIGN AEROSPACE CONSORTIUMS  
PARTICIPATION IN RAAF'S BASIC TRAINER AIRCRAFT PROJECT

This is an area of spinning pipe-dream fantasies about "cheaper" overseas aerospace acquisitions; as an example: take an overseas aerospace firm Hawker de Havilland operating in Australia:

- (a) 70% of their net profit is repatriated to UK.
- (b) Thus if an overseas aerospace firm acquires any contracts for civil or military aviation work (such as an offset program) the net final benefit accrues not to Australia but to overseas parent company in the form of:
- . financial gains (profits, net worth increases etc.)
  - . technology transfers.

Australia is left with providing lower echelon of the workforce. All other economic benefits flow to overseas holdings.

- (c) Australian Government subsidizes such work.  
List of subsidiaries was provided above.
- (d) The disturbing aspect is however that the Australian Government subsidized gains, earned in Australia are not only repatriated overseas but in turn benefit other subsidiaries of the foreign parent.
- This includes all Hawker Siddeley, UK subsidiaries in South Africa.

- . Hawker Siddeley International Pty Ltd  
Box 31053

Johannesburg, South Africa.

Head office seems to run various sub-branches in:

Durban: (p. 272 of the Durban telephone book)

- \* Hawker Siddeley Electric  
Crompton Parkinson Afdeling  
Winderstr 45  
Bus 3107 'Phone 37.9331  
Durban
- \* Hawker Siddeley Electric  
Crompton Parkinson Dix.  
(address as above)  
Durban
- \* Hawker Siddeley  
Machines  
Sales & Services  
50 Prince Alfred Str.50  
Durban 32.0571
- \* Hawker Siddeley Machines  
Verkope & Dieus  
(address as above)  
Durban
- \* Hawker Siddeley  
Transformators  
Box 3415  
(phone as above)  
Durban

(All told 6 (six) entries in Durban phone book)

Capetown

- \* Hawker Siddeley  
Africa (Machines) Pty Ltd  
124 Voortrekker Rd.  
Box 257  
Maitland  
Capetown Ph: 436547

The philosophy of "cheaper" overseas aerospace purchases of trainer aircraft appear to result in the net loss in the Australian balance of payments account and denies development of Australian aerospace skills above the shopfloor level.



## Millicer Aircraft Pty. Ltd.

incorporated in the ACT

P.O. Box 286, Royal Exchange  
34 Pitt Street, Sydney, NSW, 2000  
Australia  
Fax 03/G2: (02) 235.0108  
Telex: AA22397

Telephone: (02) 231.8622  
After hours (02) 969.3134

Ref: \*266\*

### NEW AEROSPACE FACILITY IN AUSTRALIA

AUSTRALIAN OWNERSHIP. EXTENSIVE DESIGNING, MODIFICATION,

ADAPTION AND EVENTUALLY MAINTENANCE CAPABILITY

#### Historical Background

In 1960 Victa Ltd. established an Aviation Division to manufacture light aircraft in Australia.

The Chief Designer was Henry Millicer, former Chief Aerodynamicist of the Government Aircraft Factories.

He was wholly or partially responsible for design of:

- Percival Provost - RAF basic jet trainer some 600 built
- Jindivik Mk1 & 11 - RAAF target aircraft 450 "
- Malkara-Anti-Tank Guided Missile 1,500 "
- ULAA - Airtourer winner of the Royal Aeroclub of UK competition
- Aircruiser - its airframe adopted for CT-4 RAAF trainer aircraft

#### Millicer Aircruiser Airframes Still Flying in Active Service:

• RAAF	45 airtrainers
• Royal Thai Air Force	24 "
• RNZAF	14 "
• Other services	2 "

Some 85 Aircruiser/CT-4 class aircraft were constructed. The original Millicer Aircruiser is still flying in Australia.

For his contribution to Australian Aviation Henry Millicer was awarded in 1984 the Honoris Causa Doctorate by the Royal Melbourne Institute of Technology.

#### Original Light Aircraft Market in Australia

Until Victa's entry into Australian aviation market in 1962-63 all single engine aircraft (Crop dusters ex Transavia excluded) were imported.

USA share of Australia's total single-engine market in 1961-62 was 96.4%.

#### Effects of Millicer-Victa Production on Imports of US Made Light Aircraft into Australia

Millicer-Victa Aviation reduced the share of US Light aircraft imports from 96.84% in 1961-62 to 22.4% in 1963-64.

#### American Light Aircraft Manufacturers Response to Millicer-Victa Gaining Large Share of the Australian Market

American light aircraft manufacturers took a number of steps which in the long term were designed to jeopardise not only Millicer Victa's future but the whole direction of the Australian light aircraft manufacturing capability.

Some of the steps taken are worth recording:

- American two-seat aircraft were imported far above normal market growth rates.
- Special price reductions were introduced at dumping levels.
- Extended aircraft trial periods without any down-payments were introduced as special customer incentives.
- Cessna prior to October, 1965 offered two-seat Cessna 150 for \$10,400.
- In Australian Flying (Oct., 1965) the same Cessna 150 indicated a reduction to \$8,750 or only 84.1% of the original cost (discount of 15.9% in one month).

#### Victa's Application to the Menzies Government and failure to Provide the Emergency Quantitative Restriction Over the Number of Imported Two-Seat Aircraft to Prevent Dumping.

- The main thrust of the application was not to prohibit importation of foreign light aircraft but not to encourage the creation of an abnormal situation where a disproportionately high number of two-seat aircraft could be dumped on the Australian market for the sole purpose of stifling rapidly expanding Australian light aircraft industry.

- Number of imported aircraft be related to the manufacturing capability of the Australian light aircraft manufacturers.
- The future imports be based on 1964-6 imports together with 20% allowance for market growth.

#### Menzies Ministry Refuses Victa's Application

- Victa's application was refused.
- By 1965 USA imports of light aircraft rose by 33%. It was a classic example of dumping completely unrelated to Australian light aircraft demand.
- Victa ceased production.
- Some 170 skilled people lost their jobs.
- Existing manufacturing facilities were sold to NZ whilst aircraft designing skills remained in Australia.
- Transavia became the only 100% Australian airframe manufacturer left in Australia.

Year	Imports from USA Two-Seat Light Aircraft	Index
1963 - 4	9	~ 100
1965 - 6 (1/2 year)	33	366.7
1965 - 6 (full year)	66	733.3

After Victa was eliminated out of competition and Australian light aircraft market was once again 100% in foreign hands.

#### Millicer-Victa Record Light Aircraft Production

All up production of Millicer-designed light aircraft (Australia and New Zealand) established record levels of:

- Airtourer 252 aerobatic trainers constructed
- Aircruiser/CT-4 85 military airtrainers built

#### Australian Government Purchases 45 Millicer CT-4's from New Zealand

- By an amazing set of circumstances 45 Millicer designed

Aircruiser airframes, built in NZ were re-purchased by the Menzies Government as CT-4.

Australian Government direct order to Victa for 45 Aircruisers modified to RAAF's requirements would:

- preserve Australian light aircraft industry and its skills;
- probably capture most of custom of the world's aeroclubs and military airtrainers in view of its outstanding design, ruggedness and cost efficiency of Millicer designed airframes.

#### Excellence of Millicer Designed Light Aircraft

- Airtourer was readily accepted by the Australian Aeroclubs as a primary, aerobatic trainer. With suitable aerodynamic refinements can still easily become the best aerobatic light aircraft in its class in the world.
- There is an unfulfilled world demand for efficient rugged and cheap light aircraft airframes for both pleasure and military usage.
- As an example:

Lear Siegler Inc., Piper Aircraft Division built a total of 2,497 Tomahawk/Tomahawk II (Piper-PA-38-112) side by side air trainers. Piper announced that it intends to recommence production of the Tomahawk in 1987.

Performance comparisons indicate that even the original Airtourer is still an outstanding primary training aircraft particularly when compared with a Tomahawk II.

	<u>Millicer Airtourer</u>	<u>Piper Tomahawk II</u>	
Max Speed SL	228.5 Km/hr	209 Km/hr	9.1% slower
Range	757.6 Km	745 Km	1.7% shorter
Initial Rate of Climb	274. m/min	213 m/min	22.3% slower
Empty Weight	489.9 Kg	757 Kg	54.5% heavier

Mr Don Bigler, President of Teledyne Continental Motors stated in his January 20th, 1986 lecture in Sydney: "the main issue in American and world aviation is the



lack of technologically advanced, relatively cheap, easy to maintain, fast airframes".

In 1965 Piper Corporation purchased Millicer Airtourer 115 on the strength of its outstanding aerobatic capability. Even the "inside knowledge" did not allow Piper Tomahawk match the Airtourer neither in performance or aerobatic excellence.

#### AIRCRAUISER/CT-4

Attached "Milltrainer" pamphlet covers all aspects of RAAF existing trainer and conversion options.

#### MILLTRAINER AND THE UNDERGRADUATE PILOT TRAINING CONCEPTS

#### MILLTRAINER FIVE OPTIONS. NEW LIGHT AIRCRAFT DESIGN AND EXPORT CAPABILITY

Millicer Aircraft have developed 5 (five) versions of the Milltrainer (airtrainer military option).

The Aircruiser is a civil, as well as the Air Force, Navy and the Army support version.

These are:

	<u>AIRCRAFT</u>	<u>TURBOPROP</u>	<u>UNDERCARRIAGE</u>
1.	Milltrainer 330TR	Allison 250 B17-B	Fixed
2.	Milltrainer 330TR	"	Retractable
3.	Milltrainer 375TR	Garrett TPE 331-1-151	"
4.	Milltrainer 500TR	"	"
5.	Aircruiser	Engine at Customer's Option	"

The aim of the first four versions was to design an aircraft that will very closely satisfy RAAF undergraduate pilot training needs.

#### MILLICER AIRCRAFT BROCHURE

Compares RAAF No. 5044 Air Force Staff Requirements for Basic Pilot Training Aircraft (pp.8-9) with:

- Milltrainer 5 (five) versions

- Beach T 34-1 Turboprop. US Air Force and US Navy Advanced Trainer
- Pilatus Flugzeugwerke A.G., Stans, Switzerland, PC-9 Turboprop
- Wamira - Turboprop

- \* Milltrainer 374TR meets all the RAAF requirements but the heavy armament one.
- \* Milltrainer 500TR: (last page of the Brochure) MEETS ALL AFSR No. 5044 SPECIFICATIONS INCLUDING 1,330 lbs OF STORES.
- \* Pilatus PC-9 DOES NOT MEET SIX (6) REQUIREMENTS (p.9 of the brochures) of the RAAF's AFSR No. 5044 (p.8).

When consideration was given to purchase 86 Pilatus PC-9 in December, 1985 two PC-9 (HB-HPA and HB-HPB) apparently achieved only 100 hours of test flying to justify Australian Government expenditure of \$284.06M or \$3.3 million per airtrainer.

It has been said that by end of February 1986 PC-9 test flying hours have been increased to some 250 hours per aircraft.

This is approximately 0.17% of CT-4's flying hours.

It is significant that neither in England or Paris Air Shows, 1986 did the PC-9 engage in any aerobatics of consequence.

#### RAAF's CT-4 TRAINER. WHY UPGRADE AT ALL.

- CT-4 has, as it stands now, an inbuilt training limitation. In fact it is already obsolete.
- Does not comply with the AFSR 5044.
- Purchase of the few new CT-4's will not solve training problems and eradicate the obsolescence but certainly will increase all the costs in the long run.

#### Existing Training Capabilities Limitations

- CT-4 cruise speed is already too slow for RAAF navigation exercises syllabus. Minimum 3 n.m./min. is required. This CT-4 cannot achieve.
- As aircraft is fitted with an old engine (out of production in UK) and the climb performance and hence aerobatic capabilities are rather poor at 10,000 ft.

CT-4's 210 HP IO-360-6 engine has a TBO (Time Between Overhaul) only 1,200 hrs. Its overhaul hours compare rather poorly with the modern turboprop such as Garrett with 3,600 hrs TBO or 200% longer.

3. Spinning rate, due to misconceived modifications to the original design, is too high. Spin is flat, recovery difficult.
- Already RAAF discontinued teaching spinning techniques as students get dizzy and disorientated and do not acquire spinning skills. Now only entry into spin is demonstrated.
4. Recovery forces are too high on the stick due to very high rate of descent in spin. Thus excessively large height loss results.
5. Canopy jettisoning (to bail'out) may be difficult in yaw.
6. Original canopy was re-designed and resulted in a very noisy cockpit.
7. Aircraft has an obsolete fixed undercarriage.
8. Is not airconditioned.
9. CT-4 can provide training at only about first 40-60 hrs level. CT-4 has little capacity to reduce costs of expensive PC-9 or very costly jet trainer (Macchi MB-326-H).
10. At the moment very expensive Macchi MB-326-H jet is used for 140 hrs. of pilot's tuition.

#### CT-4 FATIGUE LIFE LIMITATIONS

CT-4 has been flying for many years in RAAF's service.

Eventuality exists that:

- \* Pilatus PC-9 due to production time slippage may not be ready for basic and advanced training by 1988 and simultaneously some of the CT-4's fatigue life may expire.

Therefore primary training facilities will be impaired as the CT-4 will become fatigue life unsafe.

This will attract a range of financial penalties.

- \* Purchase of additional obsolete CT-4's will be an operational and financial absurd.
- \* Further, Pilatus PC-9 may develop unforeseen fatigue life or flying characteristics problems.

It is not a fully tested aircraft and its flying time to date was only 0.017% of that of the Millitrainer.

#### Airframe and Fatigue Issues

As early as 16th April 1985 the Report of the Auditor-General's Office drew attention to the two issues:

- (i) The Aeronautical Research Laboratories fatigue "tasks indicated the life of the aircraft (CT-4) could be extended to the early 1990's without additional cost" (p.15)
- (ii) Whilst the Auditor-General's Report confirmed the excellence of the CT-4 airframe it however issued a warning phrased as follows:  
 "The Wamira was planned for introduction into service in mid-1988 when it was originally estimated that the life of the CT-4 would expire.  
If the present delay of 1 (one) year, increases during the remainder of the project ("Wamira") it may be necessary to incur additional costs to extend the life of the existing trainer aircraft"
- (iii) Australian Built Pilatus PC-9 may fly in squadron service by 1988.

#### Possible Delay Factors

- (i) "Wamira project (now defunct) example:

\*Costs incurred were:

Phase I	\$4.3 m (p.11)
Phase II	\$64.4 m (p.12)
	\$68.7

\*Delays were in excess of 2 years and not a single "Wamira" trainer ever took to air.

- (ii) Pilatus, Flugzeugwerke A.G. Stans, Switzerland (subsidiary of armament consortium Oerlikon - Buchler Group) constructed the PC-9. However PC-9's status may well encounter delays resulting from the fact that:
  - (a) There are only two (2) PC-9 experimental aircraft (HB-HFA and HB-HFB) flying. Pilatus PC-9 is not accepted as a trainer aircraft by any airforce of the world, but the RAAF.
  - (b) PC-9 aircraft have not been, as yet, fully certified, neither by Swiss or any other aviation authority.
  - (c) PC-9 wing, fuselage and the empennage have not been subject to any fatigue tests by the Australian Aeronautical Research Laboratories, Melbourne a must before \$248m is spent by the unproven airframe.
  - (d) Airframe target life for the PC-9 is 10,000 service hours. This has to be confirmed as yet in active service.

Even if 10,000 hours service hours can be achieved by the PC-9 the Miltrainer (re-designed and upgraded CT-4) appears to be at least 1.25 times more:

- . fatigue life efficient, and
- . 5.5 times more cost efficient.

#### CT-4 Fatigue Life

CT-4 has been extensively fatigue life tested by the Aeronautical Laboratories, Department of Defence, Melbourne.

Full fatigue testing of CT-4 commenced in June 1983. Partial fatigue tests were initiated already in 1980.

#### Final results were:

- \* 51,000 fatigue life hours were achieved.
- \* This translates in approximately 12,000/12,500 hours of operational flying life of the trainer.

#### Pilatus PC-9 Lack of Airframe Fatigue Tests and Life Limitation

To-date no fatigue tests have been carried out by the Aeronautical Research Laboratories, Ministry of Defence, Melbourne on PC-9. Further it appears that the Pilatus PC-9 fatigue life is limited.

The Draft Report of the Inter-Departmental Committee on the Basic Trainer Aircraft Project, February 1985 however notes that as the compensation "for their (PC-9) somewhat shorter fatigue lives" compelled the Australian Government to INCREASE PC-9 ORDER BY 17 FROM 69 TO 86 AIRTRAINERS.

#### Additional Cost to the Australian Government Arising out of Limited Fatigue Life of PC-9 Airframe is thus:

* Original order for 69 PC-9 trainer was worth	\$237.23 million
* Compensation for limited fatigue of the PC-9 required extra 17 additional trainers at	\$ 46.83 "
Total cost of 86 Airtrainers - 19.74% over the original budget	\$284.06 million
	*****

Reference: Report No.20; BIE, Feb, 1986; p.295 (see Appendix "B" p.1)

However with the additional expense of \$46.83 million there are some further issues to be noted:

- (a) To provide PC-9 with grass/gravel take-off, landing capacity:
  - \* new undercarriage has to be designed
  - \* this in turn requires re-design of the wing to take heavier landing gear.
- (b) There is no guarantee how the new wing aerodynamics may alter PC-9 flying performance.
- (c) Some further 11,000 design hours may be required to achieve tasks (a) and (b).
- (d) New test flying routines will have to be undertaken to test both the new wing and the undercarriage performance.
- (e) Whilst Pilatus may bear the costs of the re-design, the resulting time slippages may generate some serious problems to the time scale in the PC-9 deliveries.
- (f) Australian design participation: NIL (Appendix "I").

It has to be emphasised that the fatigue life span relates directly to airtrainer operational costs.

These will accrue if the aircraft is not fully fatigue tested prior to any financial commitment by the Australian Government.

#### MILLTRAINER AND RAAF AFSR 5044 AND 5045 SPECIFICATIONS FOR BASIC AND ADVANCED TRAINERS

Millicer Aircraft has carried out:

- \* Dr. Millicer carried out full feasibility studies of aerodynamic, structural and engine upgrading of the CT-4 to meet RAAF operational requirements.
- \* Both Garrett Corporation and Allison Gas Turbines assisted in this task.

Thus:

MILLTRAINER 375TR meets all RAAF operational requirements (full bomb load excepted) for training.

- \* Air-cycle - Air-conditioning system will be available.

MILLTRAINER 500TR complies with:(a) expanded role of AFSR 5044

At the RAAF Atmospheric Environment condition (hottest temperature) turboprop will achieve 375SHP and 500SHP powers at 20,000 and 10,000 ft respectively for training and expanded role.

- (b) Millicer 500TR will lift 600kg of external stores.
- (c) Air-conditioning will be available.
- (d) Both M 375TR and 500TR have full grass/gravel landing capability.
- \* Technical details are set-out on the last page of Millicer Aircraft brochure.

Historical Digression

Historically it is interesting to place on record that in 1979:

- \* Government Aircraft Factories
- \* Commonwealth Aircraft Corporation and
- \* Hawker de Havilland

conducted a feasibility study which concluded:

"Basic trainer which fully meets the requirements of AFSR 5040 do not exist nor was projected overseas"

Ref: Why Australia Can't Make Its Own Hardware? The Journal of Institution of Engineers, Australia; 7th March 1986 p.27-28.

Article does not mention however that:

Whilst the "Wamira" nor the PC-9 fully comply with AFSR 5044 - Millitrainer 375/500TR does

As an example:

AFSR 5044	WAMIRA	PC-9	MILLTRAINER
.Max AWW Aerobatic 4,410 lbs	5,050 lbs .14.5% <u>OVERWEIGHT</u> .Wing static tests failure (Univ. of NSW) required wing strengthening modifications which further increased weight of "Wamira".	4,982 15% <u>OVERWEIGHT</u> Further possible weight increases arising out of: .Heavier under-carriage requirement to provide PC-9 with grass/gravel landing/take-off capability. .Wing alterations of not known consequences.	2,990 32.3% <u>UNDERWEIGHT</u> .Includes Full grass/gravel landing/take-off capability.
.Usable Fuel	N/A	NOT MET	MET
.Stall Speed (flaps up) 70KEAS	68 2.9% <u>SLOWER</u>	79 12.9% <u>FASTER</u> RAAF requirement Not met.	63 10% <u>SLOWER</u>
.Stall Speed (flaps down) 55KEAS	60 9.1% <u>FASTER</u>	70 27.3% <u>FASTER</u> RAAF requirement Not met.	51 7.3% <u>SLOWER</u>
.Time to Climb to 10,000ft.min 5.0 min	6.1 22.0% <u>LONGER</u>	N/A	4.6 8% <u>FASTER</u>
.Sortie 1 3hrs + 50mins	3hrs + 50mins	2hrs + 20mins RAAF requirement Not met.	3hrs + 50mins
* All told PC-9 misses on some 6 (six) AFSR5044 requirements.			

- \* Exceptionally low landing take-off speeds of the Miltrainer arise out of Dr Millicer invention "the vortex flap" now adopted for 747-SP by Boeing Aircraft.

Draws attention to the fact that Millicer CT-4 has, as it stands now, an inbuilt training limitation. In fact it is already obsolete.

Does not comply with the AFSR 5044.

Purchase of the new CT-4's will not solve training problems but will only increase costs in the long run.

Thus an eventuality exists that:

- \* Pilatus PC-9, due to time slippage, may not be ready for basic and advanced training service and simultaneously the CT-4's fatigue life may expire.

Therefore primary training facilities will be impaired as the CT-4 will become fatigue life unsafe.

This will incur a range of financial penalties

- \* Pilatus PC-9 may develop unforeseen fatigue life or flying characteristics problems. It is not a fully tested aircraft and its flying time to-date was only 0.017% of that of the Miltrainer.

This could result in forced purchase of 69 new primary trainers at an estimated \$198 million.

Total bill could be then

86 PC-9 aircraft	\$284.06 million (actual)
69 New primary trainers	<u>\$198.00</u> " (estimated)
	\$482.06 million
	*****

If this equation is taken to ab absurdum Millicer Aircraft can supply for \$482.06 million some 803 (eight hundred and three) Miltrainers.

#### Miltrainer Durability and thus Cost-Effectiveness

- . some 300,000 flying hours achieved
- . about 420,000 landings and take offs
- . not a single fatal flying accident arising out of aircraft flying characteristics.
- . completed 51,000 fatigue test hours at Aeronautical Research Laboratories, Melbourne - equivalent to some 12,000-12,500 hrs of operational life.

\*To date PC-9 can only claim two (2) flying prototypes with a record of only some 250 flying hours. Neither of PC-9 prototypes have been fatigue or operational service tested.

- \* PC-9 cannot be used for 40-60 hours of pilot's primary tuition.
- \* PC-9 airframe suggested by the manufacturers target life of 10,000hrs or L.O.T. of 20 years is not proven. The Jet Provost with similar design of wing pick-up point proved to be good for only 4,000 flying hours.

#### Miltrainer Technical Excellence Confirmation

Official confirmation by recognised aerospace experts is available in respect of Miltrainer flying characteristics and in this regard reference should be made to Appendix "A".

#### PC-9 Fatigue Life Issue and Associated with it higher costs

- . Against that background THE INESCAPABLE CONCLUSION THAT THE ACQUISITION OF PC-9 WOULD MEAN THAT 3 TRAINER FLEETS WILL BE REQUIRED: 45 CT-4's (or equivalent) for the first 40-60 hours, 86 PC-9's and Macchi M-326-H jets.
- . If Miltrainer 375TR/500TR is employed two fleets CAN accommodate pilot's tuition.

PC-9 primary training limitations and the doubts expressed about PC-9 fatigue life are sharply brought to focus by the Bureau of Industry Economics, Report No. 20, The Australian Aerospace Industry: Structure Performance & Economic Issues; BIE, AGPS, Canberra, 1986 p.295. It confirms the above fatigue life reservations in the following terms: "... 17 MORE AIRCRAFT (PC-9) WOULD BE REQUIRED TO COMPENSATE FOR THEIR SOMEWHAT SHORTER FATIGUE LIVES".

Thus to accommodate still unproved fatigue life PC-9 trainer the original budget of \$237.23 million for 69 PC-9's had to be increased by \$46.83 million for an extra 17 PC-9's. Thus the total budget for the acquisition of PC-9 basic trainer project stands now at \$284.06 million.

ECONOMICS OF MILLTRAINER 375/500TR  
COST-EFFECTIVENESS AND SAVINGS OPTIONS

A. Current Ruling Prices for Milltrainers

(I) Milltrainer Conversion Cost Schedules - existing CT4's  
(Attachment "B" refers)

Cost of AIRFRAMES only. (Australian Currency) Retractable Undercarriage

Milltrainer Number	Price Per Airframe	Total Cost
	\$AMillion	\$AMillion
45	.41	18.5
69	.42	29.0
86	.42	34.4

(II) Cost of AIRCRAFT WITH TURBOPROP. Retractable Undercarriage

Milltrainer Number	Price Per Aircraft	Total Cost
	\$AMillion	\$AMillion
45	.61	27.4
69	.62	42.8
86	.6	41.6

Above prices indicate:

- (a) Milltrainer Aircraft versus PC-9 savings to Australian Government Schedule -  
Per Fleet \$M  
\$194.3 million (69 aircraft)  
\$232.5 million (86 aircraft)  
For further elaboration refer to Appendix "B" and para. C.
- (b) In case of the number of airframes exceeding 45 (forty-five) additional airframes up to 69 or 86 will consist of NEW AIRFRAMES built by Millicer Aircraft in Australia at prices given.
- (c) Turboprops suitable for Milltrainer 375TR/500TR are approx. \$100,000 per engine cheaper than P&W PT6A-62 950 SHP gas turbine used by the PC-9. Cost of gas turbines may alter due to \$A v \$US exchange rate

fluctuations and are thus approximate.

- (d) Above quotes do not include cockpit avionics upgrading. If these are supplied they can be fitted at agreed cost schedule.

(III) Additional Cost Savings Options Arising out of Employment of Milltrainers

Further cost reductions are feasible, if RAAF so desire, by their providing active assistance to reduce costs to full range of Milltrainer test flying such as:

- (a) Test pilots  
(b) Fuel  
(c) Certification flight trials  
(d) Administration for the Flight Manuals Revision  
(e) Administration for production of reports

In such a case Millicer aircraft will reduce the airframe redesign total costs by \$2,400 per aircraft. The Australian Government will then save a further \$108,000 - on a contract for 45 aircraft

\$165,000 - on a contract

for 69 aircraft.

(IV) All above quotations are:

- (a) Firm for 30 (thirty) days  
(b) Subject to CPI variances and US\$ exchanges rates fluctuations/new adjustments. (Turboprop is of US origin.)

B. Unit Cost Savings Data

PC-9 Cost (Appendix "B")

\* 69 A/C basis \$3.3m per PC-9  
Milltrainer .6 " Milltrainer  
Saving 2.7m per trainer (approx)

\* 86 A/C basis \$3.4 per PC-9  
Milltrainer .6m " Milltrainer  
Saving \$2.8 per trainer (approx)

Note: No provision for updating avionics in CT-4.

C. Maximum Possible Capital Costs Savings:

Table "B" details cost savings schedule by substitution of PC-9's by Milltrainers:

17.

* 69 trainer basis	
69 PC-9's	\$237.23m
69 Milltrainers	42.9 m
Savings	\$194.33m on 69 A/C
* 86 trainer basis	
86 PC-9's	\$284.06
86 Milltrainers	51.6
Savings	\$232.46m on 86 A/C

#### APPROVED BASIC TRAINER PROJECT BUDGET CONSIDERATIONS

Having regard to the fact that the Cabinet has basically approved the budget for purchase of new trainer fleet at \$284.06 million it is relevant to consider alternative and perhaps effective ways of perhaps maintaining the original number of 69 PC-9's and appropriating the balance of the funds to 69 Milltrainers.

Thus the total RAAF fleet would consist, instead of three (3) airtrainer fleets of two (2) distinct types of basic trainers as follows:

69 PC-9's	\$237.23 million	
69 Milltrainers	46.83	(\$42.9 plus \$3.93 avionics)
Fleet of 138 trainers	\$284.06 million	

#### BUDGET ALTERNATIVE I (Appendix "C" refers)

- Millicer Aircraft Pty Ltd completely re-designs 45 CT4's to Milltrainer 375TR/500TR standard
- Constructs 24 new Milltrainers
 

* Cost of 69 (sixty-nine) Milltrainers with the turboprops will be	\$42.9 m	
* Avionics upgrading at cost (if needed)	\$ 3.93m	\$46.83M
Total cost of fleet of 69 Milltrainers		\$237.23M
69 (sixty nine) PC-9's		
Total cost of training fleet of 138 aircraft, within the approved budgetary framework	\$284.06M	*****

18.

#### BUDGET ALTERNATIVE II (Appendix "C" refers)

\$ MILLION

* 45 (forty-five) Milltrainer aircraft with turboprops	\$27.3 m	
+ Milltrainer avionics upgrading	3.93m	\$31.23
* Total 45 Milltrainers		\$237.23
* 69 (sixty-nine) PC-9's		
* Budget savings		\$ 15.60

Cost of Total fleet 114 (one hundred and fourteen) aircraft for the original cost of 86 PC-9's, equal to the Cabinet approved Budget \*\$284.06M  
\*\*\*\*\*

PC-9 COSTS \*Source: Australian Aerospace Industry; Structure Performance and Economic Issues; BIE: AGPS, Canberra, Feb. 1986; Table 9.2.1; p.295.

#### Alternative I & II Advantages

- Budgetary framework of \$284.06 million for RAAF trainer fleet will remain unchanged.
- RAAF will have two fleets of two modern types of trainer aircraft in a number sufficient to cover all possible pilot training concepts, instead of trainer fleet of three different aircraft types including, an obsolete CT-4 as a primary trainer.
- Milltrainer will add substantially to the cost-effectiveness of the undergraduate pilot training with substantial reduction of expenditure on very costly Macchi MB-326-H jet trainer. (See Operational Cost Savings Schedule: Appendixes "C" and "D")
- It will dispense with the obsolete, CT-4's.
- Eliminates the feasible eventuality that if CT-4 fatigue life expires, by about 1900, RAAF being forced to purchase a new range of very expensive new fleet of primary trainers to cater for PC-9 training limitations in this very phase of pilot's tuition.
- Milltrainer will have an effective operational life well past year 2,000. In fact 30 years, or 12,000 flying hours, from the date of delivery to the RAAF is indicated.

#### C. OPERATING COST SAVINGS

Cost Schedules Arising out of Employment of Milltrainer 375TR/500TR (Attachments "C" and "D" refer)

The two attached operational cost schedules were specifically constructed to develop an approximate comparative linear model of the relationship between two

variables namely the cost per flying hour and 5(five) combinations of notional hours, assigned to pilot's tuition, employing different trainer configurations.

The limited data available was used as a basis for an analysis of association. Thus it has to be treated as a trend indication only. Simulation cost model can be quickly developed provided historical time series are furnished.

Two sources were used:

- \*Group Captain R.W.Holland, RAAF, lecture to the Royal Aeronautical Society, Melbourne, 1985.
- \*Australian Aviation March/April, 1986 p.18 article.

Clues obtained from these sources were analysed in an identical, systematic, logical manner and are based on 200hrs of pilot's tuition.

These lead to general trend indications which proved to be remarkable by their consistency.

COMPARISON OF COSTING RESULTS ARISING OUT FROM  
TABLE I (ATTACHMENT "C") AND TABLE II (ATTACHMENT "D")  
BASIS: SAVINGS ON 200 HRS PILOT'S FLYING TUITION

Milltrainer Cost Advan- tage %	Savings per fly- ing hr. \$	Savings per 200 flying hrs \$	Savings per trainer fleet based on 200 flying hrs per aircraft only \$ MILLION									
			45 A/C				69 A/C				86 A/C	
			TI	TII	TI	TII	TI	TII	TI	TII	TI	TII
6.7	7.0	76	60	12,070	15,200	.68	.54	1.0	.83	1.3	1.0	
11.9	16.2	136	139	27,820	28,200	1.2	1.3	1.9	1.9	2.3	2.4	
17.6	26.3	200	226	45,235	40,000	1.8	2.0	2.8	3.1	3.4	3.9	
20.9	31.4	238	270	54,020	47,680	2.1	2.4	3.3	3.7	4.1	4.6	
23.7	36.2	268	312	62,370	53,680	2.4	2.8	3.7	4.3	4.6	5.4	

- \* Operational cost analysed above should be read in conjunction with capital expenditure Appendix "B" to encompass advantages the Milltrainer can offer in the fixed and variable costs areas. (Milltrainer's capital cost is 5.5 times cheaper than the PC-9. Appendix "B" refers.)
- \* To obtain TOTAL OPERATIONAL SAVINGS above figures have to be increased by the utilisation factor of CT-4. It could be as high as 600hrs per aircraft per year. Actual data is not available and presumably varies from aircraft to aircraft.
- \* Milltrainer allows very substantial saving of the training costs of the pilot's student tuition to the "wings"

standard. These costs are considered by RAAF now to be unnecessarily high (Appendix "C" and "D" illustrate this vital issue). Costing methodologies are available on request.

EXPORT POTENTIAL

- (i) The capital cost (approx. \$.6m per aircraft) and performance characteristics of Milltrainer are such that it will have general appeal as a relatively cheap training aircraft particularly in countries which are currently using the CT-4. These countries may not opt for a training aircraft such as the PC-9 at \$3.3 million each.
- (ii) Pursuance of export objectives at high unit price levels will most likely necessitate Australian Government subsidies as shown by "Nomad" and "Wamira" experience.
- (iii) PC-9 with 950 SHP gas turbine, AOW of 4,982 lbs, is about 1.7 times heavier than the Milltrainer. Its engine is in the power range of World War II Spitfire Mk. 1. Obviously the weight and the high SHP result in rather unfavourable operational cost-schedules.
- (iv) Its flying characteristics prevent 40-60 hrs. of pilot's primary tuition phase (as stated in Pilatus brochure).

Thus it appears that the impediments to PC-9 exports will be rather similar to that of "Nomad" and "Wamira", unless subsidised by the Australian Government.

- (v) The Milltrainer at the price of \$.6M per aircraft offers much more substantial chance of export sales. These will not only defray some further design and development costs but also allow for substantial future purely Australian aircraft research and development and extension of existing design aerospace capabilities.
- (vi) In the Milltrainer case aircraft design expertise will augment objectives of high performance, cost effectiveness, development of further design capabilities with a substantial export marketability.

MILICER AIRCRAFT CAPABILITY TO MANUFACTURE AIRCRAFT IN AUSTRALIA WITHOUT AUSTRALIAN GOVERNMENT SUBSIDY

The fundamental to above is Millicer Aircraft - Transavia, (Member of Transfield Group) manufacturing agreement.

Transavia is an active light aircraft (agricultural) manufacturer.



MILLICER AIRCRAFT/TRANSAVIA DESIGN/MANUFACTURING CAPABILITIES

1. Millicer Aircraft aeronautical design expertise we will not suffer from the inexperience syndrome as recently encountered in attempt to design Basic Pilot Trainer. "Wamira" trainer initial costs run to \$70 M and the prototype never took to air.
2. Combined skills of Millicer Aircraft and Transavia are supported by the fact that BOTH FIRMS ACTUALLY DESIGNED AND BUILT AIRCRAFT in Australia (Airtruk, Airfarmer, Airtourer, Aircruiser and Aircruiser/CT-4).
3. These aircraft EFFECTIVELY FLY NOW IN AUSTRALIA AND OVERSEAS in active service. They were designed, built and exported without any Government subsidy.
4. Transavia recently developed a new export market in the People's Republic of China for their agricultural aircraft Airtruk/Skyfarmer.
5. Entry into the China's aviation field provides an excellent practical platform for introducing very operationally and cost effective Milltrainer and perhaps the aerobatic Airtourer to export market.
6. Further we are certain that the RAAF criteria of performance, durability and cost-effectiveness can best be met by designing developing and manufacturing light aircraft in Australia.  
Originally designed by Dr. Millicer CT-4 proved an admirable RAAF training aircraft in its time slot; unfortunately it is now obsolete.
7. Milltrainer will achieve the same standard of excellence, but at AFSR 5044 levels.
8. The obvious advantage of designing a range of aircraft locally is development and maintenance of design skills in this country to enhance aerospace industry's capacity to support the Defence Forces.

Millicer/Transavia can cater for this need well and cost-effectively.

OFFSET WORK CAPABILITIES

Australian involvement in this project is not only available but important. To that end we have sought to deal with that aspect from a number of viewpoints.

In this respect:

- (a) we have in hand USA aerospace industry's enquiries for offset work (Garrett Corporation - Refer Appendix "E").
- (b) employment creation effect and continuous employment levels have been considered. (Refer Appendix "F" and "G")
- (c) we have sought to assist Pilatus in PC-9 production with the negative response from its representatives set forth in Appendix "H" (all design will be executed in Switzerland).

Production facilities of Transavia are such that would allow Milltrainer prototype production to commence within 7 days of the first order as all the fundamental aerodynamic and structural problems are already solved.

Manufacturing potential of Transavia can provide for simultaneous production of:

- . Skyfarmer/Airtruk - agricultural aircraft
- . Milltrainer - in military and civil versions
- . Airtourer - as the best aerobatic small aircraft for Aeroclub training still flying in Australia.

Millicer-Transavia co-operation will further develop 100% Australian sophisticated light aircraft industry with both high technology skills and excellent manufacturing capacity.

However the confidence of prospective overseas buyers is closely associated with the Australian Government attitudes.

As an example:

Preliminary discussions with Indonesia, through our representatives in Jakarta, brought an encouraging message of possible trainer design co-operation.

An ominous question was put forward:

"Why such an excellent aircraft did not rate as an alternative to the new trainers acquisition when it is so obviously aerobatically, capital and operational cost efficiency superior to heavier and so much more expensive to all aircraft compared in Millicer Aircraft brochure.?"

Next question was:

"Why did Australia buy Australian designed trainers from New Zealand when the designer of CT-4 resides in Australia.?"

Support for Milltrainer project would equip Australia aerospace industry with an additional design capacity leading to advanced aircraft design capability and develop perhaps a new air trainer and allow Australian Government to reduce very high costs of future aircraft training tasks.

Background to Basic Pilot Trainer Aircraft Project

We will be pleased to furnish extracts from various Commonwealth Reports on the above topic:

1. Report of the Auditor-General upon Audits, Examinations and Inspections under the Audit and other Acts, Auditor-General's Office, Canberra, ATC, 16 April 1985. pp. 11-16 "Basic Pilot Training Aircraft"
2. The Australian Aerospace Industry; Structure, Performance and Economic Issues, Research Report No. 20, Bureau of Transport Economics, AGPS, Canberra, ACT 1986. pp. 293-295 Table 9.2.1 "Cost of Imported Versus Domestically Produced Pilatus Trainers : Australia 1985". Draft Report of the Inter Departmental Report Committee on the Basic Trainer Project, February 1985.
3. Review of Defence Project Management Vol. 2; Project Analyses; Report 243; Joint Committee of Public Accounts, Parliament of the Commonwealth of Australia, 1986. pp. 145-171 "Basic Pilot Trainer Aircraft Project".

It is a sad saga of airtrainer project costs overruns, time-table slippages, capital cost expenditures and inability to make AlO-B fly.

Strange aspect of it is that Millicer Aircraft made a firm offer for the basic trainer project, the cost schedule was 5.5 cheaper than the PC-9, however the offer, based on the extensive research by our Dr Millicer the original designer of CT-4, was not even considered or recorded.

Review of Defence Report 243 states on p. 153:

"Other Cost Saving Training Options

8.27 The Committee is unable to find in the project RECORDS any analysis of alternatives to a new aircraft acquisition. The designer of the CT4 aircraft has been reported as stating that the airframe and wings of the CT4 has a long remaining life and the aircraft could be upgraded (by installation of a new engine and re-design of the tail plane) to meet the RAAF's basic trainere aircraft performance requirements for about \$400,000 each. (17) The option does not appear to have been explicitly considered

when the Government re-structured the Basic Trainer Project in July 1985.

17. "RAAF 'Should Recycle Jet Trainer'" Australian, 9 September 1985.

The aerospace industry is seen by the governments of the world in the framework of its general industrial and technological importance. It is considered of critical strategic and defence significance.

The generation of diffusion of aerospace technological advances in Australia through a distinguished RMIT aeronautics teacher, such as Dr Millicer, will be concomitant to development of broadly skilled design and shop floor work force.

These are considered by all Governments as most important benefits to the nation: Australia should sell trainers to Switzerland as they are technically equal to any and much cheaper.

CT-4 is a military aircraft and thus any discussions relating to upgrading of 45 RAAF trainers must be based on:

- proven capability to design to the RAAF requirements (AFSR 5044)
- formulated design solutions. Surely nobody is better qualified to up-date his own design than the original designer of the CT-4 - Dr. Millicer.
- cost efficiency of the highest order.

RAAF believed that "major factor contributing to ("Wamira") project's difficulties was the AAC's inability to conceive of the total design task" Report 273; opp cit. p.169. "Wamira" never took to air. Millicer Aircraft does not suffer from such limitations.

We thus seek your support to:

1. Be included in the Basic Pilot Trainer Aircraft Project and re-examine the issue of Government funds being invested in unproven aircraft.
2. Milltrainer airworthiness to be assessed in terms of:
  - technical competence, and
  - cost-efficiency.
3. Foreign designed trainers to be subject to fatigue and aerodynamic tests by the Aeronautical Research Laboratories, Defence Department Melbourne prior to huge funds (\$284m) being committed to an untested and unproven trainer.

4. Millicer Aircraft is not seeking Australian Government subsidies but orders.

GOVERNMENT SUPPORT AND NOT SUBSIDIES ARE NEEDED

It is obvious that the Australian aerospace industry development has to derive its sales principally from its own marketing drive and commercial practices. Thus we are seeking orders from the Australian Government and not subsidies.

Orders because in Australia the primary source of commercial demand for aircraft and spares is the Government defence programme and the subject of this submission is Miltrainer for defence purposes.

As an example, recently merged aircraft firms operating in Australia (70% overseas owned) obtained 66.7% and 50% respectively of their business from the Australian Government defence orders.

We look to your support, not only to save the Australian Government very substantial capital funds, but also to provide a range of large operational savings and so revive Australian aircraft design skills and aerospace manufacturing capabilities in Australia.

This mix will open markets for the Australian light aircraft exports based on the excellence of aircraft design, manufacturing expertise and the airframe cost-effectiveness.

In existing circumstances and the unique position of the Millicer designed CT-4 as a RAAF trainer concept will make acceptance of the Miltrainer by the Australian Government a hallmark of our local and export sales campaign.

We will be delighted to make technical-economic presentation to you at time to suit your convenience.

APPENDIX "A"

MILLTRAINER FLYING CHARACTERISTICS DATA CREDIBILITY CONFIRMATION

We submit that page 8-12 of the Miltrainer brochure should be assessed in the context of Australian domestic and export requirements.

Military Version

- \* Miltrainer with Allison Model 250; 330 SHP Turboprop; Fixed Undercarriage
- \* Miltrainer: Allison Model 250; 330 SHP Turboprop.
- \* Miltrainer: Garrett TPE 331-1-151 375 SHP Turboprop; "TRAINING ROLE" within AFSR 5644.
- \* Miltrainer: Garrett 331-1-151 500 SHP Turboprop; RAAF "EXPANDED ROLE" under AFSR 5044.

Last three aircraft with retractable undercarriage.

Civil Version

Aircruiser 375: Garrett TPE331: 375 SHP Turboprop, Retractable undercarriage or with an engine to suit customer's needs.

MILLTRAINER FLYING CAPABILITIES

Should you wish to obtain an independent assessment of Dr. Millicer's Miltrainer flying qualities please contact any of the aerospace experts listed here below:

1. Mr David Pilkington B.E. M.Sc.  
Chief Aerodynamicist  
Government Aircraft Factories  
Melbourne  
Re: Aerodynamics, Structures and Flight Performance of Miltrainer/Aircruiser.
2. Dr Gordon Long B.E. Ph.D.  
Superintendent Aircraft Structure Division  
Aeronautical Research Laboratories  
Department of Defence  
Melbourne  
Re: Fatigue and reliability as well as confirmation of completed fatigue tests carried out and completed by the ARL on wing fuselage and empennage of the RAAF CT4 airtrainer.

3. Mr Eric Stokes  
Dean of Faculty Engineering  
Royal Melbourne Institute of Technology

Re: Full aerodynamic and structural assessment of  
Milltrainer and Aircruiser versions by RMIT Department  
of Aeronautical Engineering.

As to the confidence of the world's major gas turbine  
manufacturers in Milllicer Aircraft Airframes, please contact:

1. Dr John B Fallon  
Vice President  
Garrett Corporation  
Los Angeles, USA Tlx 230664684 GAR AIR LAS

Re: Garrett TPE331 Turbo prop installation and flight  
performance in various Milltrainer Airframe including  
Milltrainer 500TR (expanded, light attack roles).

2. Mr M Mollish II  
Manager Turbo prop Division  
Allison Gas Turbine Division  
General Motors Corporation  
Indianapolis, Indiana USA Tlx 687 6067 RAND-UW

Re: Installation, flight performance a suitability of  
Milltrainer airframe.

Milllicer Aircraft will be pleased to provide any necessary support  
in aerodynamics and the structural data areas to Messrs Pilkington  
and Stokes.

Presumably Dr Long of ARL could furnish a copy of his report,  
covering RAAF CT-4 full range of completed fatigue tests to assist  
in the research into Milltrainer flying efficiency.

COGS OF IMPORTED VERSUS DOMESTICALLY PRODUCED "PLIANTUS" AIRFRAMES  
COMPARISON NEW  
MILLICER AIRCRAFT AUSTRALIAN MADE MILLTRAINER (U) COMPLETELY REDESIGNED AND/OR NEW VERSION!  
AUSTRALIA 1985

AIRCRAFT TYPE	1	2	3	4	5	6	7	8	9	10	11	BY MILLICER MILLTRAINER	
												IMPORTED	LICENSED
PC-7	69	105.33	1.53	158.68	2.3	50.7	2.4 times (3 + 3)	PLIANTUS PC/7CS WITH 244 TURBOPROP MILLTRAINER WITH ALLISON/GARRETT MILLTRAINER COEF ADVANTAGE	3.7 times (3 + 3)	562.40 (3 - 3)	\$115.00	ACTUAL SAVINGS	
PC-7	86	331.27	1.5	185.88	2.2	41.6	2.5 times	PLIANTUS PC/7CS WITH 244 TURBOPROP MILLTRAINER WITH ALLISON/GARRETT MILLTRAINER COEF ADVANTAGE	3.6 times	\$79.76	\$134.30	ACTUAL SAVINGS	
PC-9	69	180.5	2.6	237.23	3.4	31.4	4.2 times	PLIANTUS PC/9 WITH 244 TURBOPROP MILLTRAINER WITH ALLISON/GARRETT MILLTRAINER COEF ADVANTAGE	5.5 times	\$137.60	\$194.30	ACTUAL SAVINGS	
PC-9	86	234.58	2.6	284.06	3.3	26.4	4.4 times	PLIANTUS PC/9 WITH 244 TURBOPROP MILLTRAINER WITH ALLISON/GARRETT MILLTRAINER COEF ADVANTAGE	5.5 times	\$173.20	\$232.50	ACTUAL SAVINGS	

MILLTRAINER AUSTRALIAN DESIGN AND MANUFACTURE  
AIRCRAFT ONLY  
Note: Columns relationship (under respective headings) is  
indicated in the top line. As a quick reference it  
summarizes complete aircraft comparison.

Based on the above, shorter fatigue life test of PC-9 will  
attract the additional cost realized by the Australian  
Government as follows based on Table 9.2.1.1 op cit. p.7

PC-9 PROJECT	
Original	69 traliers (\$2,430M each)
Further	17 additional PC-9 aircraft
	— 116 \$2,755 each
Total	86 traliers fleet (\$3,303M est)
	\$284.06

SOURCE: 1. Based on data from the Industry, Structural Performance and Economic Issues Report; Bureau of Industry Economics; Canberra, February 1985, p.293.

2. Direct Report of the Inter-Departmental Committee on the Basic Trainer Aircraft Project, Feb. 1985 (p.295)

3. Milltraine aircraft costs are based on Cost and Schedule (Technical) Control System (CCSC) established by the Milllicer Aircraft Pty. Ltd.

4. Garrett Model 314 turbo prop prices are approx. \$100,000 each. Garrett Model 314 turbo prop prices are approx. \$2,150,000 each. Garrett Model 314 turbo prop prices are approx. \$2,150,000 each. Prices are based on direct offers from US Turbo prop manufacturers.

Prices are based on direct offers from US Turbo prop manufacturers.

TABLE 1

APPROXIMATE COMPARATIVE COST STUDY PROGRESSIVE PILOTS FOR THE TRAINING COURSE MILITARIAN SYSTEM OF PC-1 DISPLAY												
SOURCE: AUSTRALIAN AVIATION BOARD/MAY 1988, R-10 COSTING APPROACH MILITARIA CT-4 F-16/AV-8B ACROSS PC-9 MARCH 1988-H AIRCRAFT APPROXIMATE OPERATIONAL COSTS												
	1	2	3	4	5	6	7	8	9	10	11	12
Type of Trainer	Training Hours	Cost per Flying Hr (Est)	Cost per Training Phase (Est)	Index CTR-100 (\$228,000/100)	Type of Trainer	Training Hours	Cost per Flying Hr (Est)	Cost per Training Phase (Est)	Savings per 250hrs of Flying (250hrs/50hr (Est))	Training Fleet		
<b>Current Training Programs (CTR)</b>												
CT-4	60	300	14,000									
PC-9	100	1,500	119,000									
MB-336-H	200	200	228,000									
<b>3. FLIGHT PC-9</b>												
MILITARIAN SYSTEM PROVIDES PRIMARY, BASIC AND PART OF ADVANCED FLIGHT TRAINING												
CT-4	60	300	18,000		M275TR	100	388	38,800				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	7.3	15,200	684	1.06	1.26
"Wings"	200	200	228,000	49.5	82.8	"Wings"	200	188,800	7.3	15,200	684	1.06
CT-4	60	300	12,000		M275TR	100	388	38,800				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	12.8	27,200	1.76	1.96	2.26
"Wings"	200	200	228,000	54.7	82.6	"Wings"	200	188,800	12.8	27,200	1.76	1.96
CT-4	60	300	12,000		M275TR	125	388	48,500				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	19.8	49,000	1.46	2.06	2.46
"Wings"	200	200	228,000	88.3	70.6	"Wings"	200	188,800	19.8	49,000	1.46	2.06
CT-4	60	300	12,000		M275TR	140	388	54,320				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	24.4	47,800	2.16	2.36	2.66
"Wings"	200	200	228,000	61.8	82.3	"Wings"	200	188,800	24.4	47,800	2.16	2.36
CT-4	60	300	12,000		M275TR	140	388	54,320				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	27.1	52,400	2.36	2.76	2.86
"Wings"	200	200	228,000	67.0	82.3	"Wings"	200	188,800	27.1	52,400	2.36	2.76

W0048P.1 22048

124

TABLE 11

APPROXIMATE COMPARATIVE COST STUDY  
PROGRESSIVE PILOTS FOR THE TRAINING COURSE  
MILITARIAN SYSTEM OF PC-1 DISPLAY

APPENDIX TOTAL  
\$66

SOURCE: AUSTRALIAN AVIATION BOARD/MAY 1988, R-10 COSTING APPROACH MILITARIA CT-4 F-16/AV-8B ACROSS PC-9 MARCH 1988-H AIRCRAFT APPROXIMATE OPERATIONAL COSTS												
Type of Trainer	Training Hours	Cost per Flying Hr (Est)	Cost per Training Phase (Est)	Index CTR-100 (\$228,000/100)	Type of Trainer	Training Hours	Cost per Flying Hr (Est)	Cost per Training Phase (Est)	Savings per 250hrs of Flying (250hrs/50hr (Est))	Training Fleet		
<b>Current Training Programs (CTR)</b>												
CT-4	60	300	14,000									
PC-9	100	1,500	119,000									
MB-336-H	200	200	228,000									
<b>PC-9 CURRENT CATER FOR AS MILITIA TRAINING INITIATION</b>												
MILITARIAN SYSTEM PROVIDES PRIMARY, BASIC AND PART OF ADVANCED FLIGHT TRAINING												
CT-4	60	300	18,000		M275TR	100	388	38,800				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	7.3	15,200	684	1.06	1.26
"Wings"	200	200	228,000	49.5	82.8	"Wings"	200	188,800	7.3	15,200	684	1.06
CT-4	60	300	12,000		M275TR	100	388	38,800				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	12.8	27,200	1.76	1.96	2.26
"Wings"	200	200	228,000	54.7	82.6	"Wings"	200	188,800	12.8	27,200	1.76	1.96
CT-4	60	300	12,000		M275TR	125	388	48,500				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	19.8	49,000	1.46	2.06	2.46
"Wings"	200	200	228,000	88.3	70.6	"Wings"	200	188,800	19.8	49,000	1.46	2.06
CT-4	60	300	12,000		M275TR	140	388	54,320				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	24.4	47,800	2.16	2.36	2.66
"Wings"	200	200	228,000	61.8	82.3	"Wings"	200	188,800	24.4	47,800	2.16	2.36
CT-4	60	300	12,000		M275TR	140	388	54,320				
PC-9	100	1,500	119,000		MB-336-H	100	1,500	150,000				
MB-336-H	200	200	228,000		"Wings"	200	188,800	27.1	52,400	2.36	2.76	2.86
"Wings"	200	200	228,000	67.0	82.3	"Wings"	200	188,800	27.1	52,400	2.36	2.76

125



APPENDIX "G"

CONTINUOUS EMPLOYMENT LEVELS AS THE COROLLARY TO MILLICER  
UPGRADED AIRFRAME AERODYNAMIC AND COST EFFICIENCY

Demand for both military and civil airframes relates to:

- (i) Flying characteristics of the aircraft
- (ii) Cost of the aircraft
- (iii) Costs of maintenance and repair
- (iv) Purchasers capacity to pay
- (v) Financial terms offered by the seller.

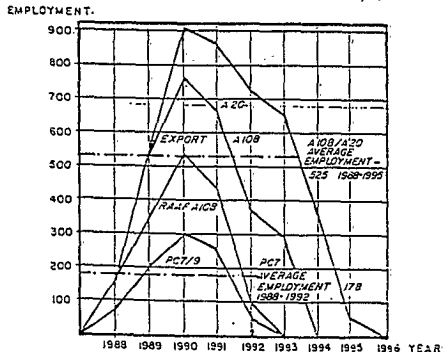
Therefore "Employment Design and Development Phase" graph for the Millicer is rather similar to PC9 curve with following provisos:-

- . If fast ground-attack project is contemplated by the Australian Government employment could move up to 275 people level.
- . Cost efficiency of the Millicer airframes would however ensure that there will be sales opportunities:
  - besides sales to the RAAF
  - sales in USA
  - extensive sales to S.E. Asia Countries

Thus in Millicer Aircraft framework production phase graph will improve to cater for extra export generated business and hence employment resulting from the cheaper Millicer airframes.

EMPLOYMENT  
PRODUCTION PHASE

- . A10B/A20 VPC7/9 AIRCRAFT
- . INCLUDING EXPORT POSSIBILITY CURVE



Source: Aircraft: January 1988  
"The First A10B takes flight"

Using - Pilatus PC9/Wamira graph as a benchmark it appears obvious that there is a distinct possibility that the very cost efficient Millicer will exceed:

- . PC9 estimated employment level of 300 people
- . A10B/A20 - export estimates
- . Pilatus PC9 export targets

In such a case employment figure could be as high as 400 employees

To achieve this however:

- (i) RAAF order is essential to allow practical demonstration to importers as to the Millicer qualities in real service environment.
  - (ii) Conversion of the first 45 aircraft will assist in achieving low cost profile. It will greatly enhance export capability of 6-seat civil version of Millicer.
  - (iii) Learning curve will be greatly enhanced.
- It will lead to most sophisticated CAD & CAM processes and thus assist in cost containment, and further cost efficiency achievements.

PRODUCTION FACILITIES

Agreement between Transavia Aircraft and Millicer Aircraft allows to commence Millicer prototype production within 7 days of the first order.

Manufacturing potential of Transavia provides for simultaneous production of:

- . Skyfarmer - agricultural aircraft
- . Millicer - in military and civil version
- . Airtourer - as the best aerobatic small aircraft for Aeroclub training.

Millicer-Transavia co-operation will further develop 100% Australian sophisticated light aircraft industry with both high technology skills and excellent manufacturing capacity.

OFFSET CAPABILITY

Purely Australian aircraft consortium offers advantageous offset capability. Both Hawker de Havilland Ltd. and Pilatus are foreign concerns and ultimate advantage of offsets accrues to UK and Switzerland.





APPENDIX B

Committee's letter to the Department of Defence requesting responses to questions raised by Millicer Aircraft's representations, dated 30 July 1986



COMMONWEALTH OF AUSTRALIA  
JOINT PARLIAMENTARY COMMITTEE OF PUBLIC ACCOUNTS

PARLIAMENT HOUSE  
CANBERRA, A.C.T.  
TEL. 727455  
TELEX AAS1689  
FAX 727689

Sir William Cole  
Secretary  
Department of Defence  
Russell Offices  
CANBERRA ACT 2600

Dear Sir William

The Committee has received a submission from Millicer Aircraft Pty Ltd about the decision to select the Pilatus PC-9 as the RAAF's new basic pilot trainer aircraft. I have attached a copy of the information received from Millicer Aircraft.

As you know the Committee paid particular attention to the Basic Pilot Trainer Aircraft Project during its inquiry into Defence Project Management. Millicer Aircraft's submission raises a number of important questions germane to that inquiry.

The Committee would be grateful if you would provide a response to Millicer Aircraft's submission, addressing in particular the following matters:

1. Did the RAAF give consideration to extending the life of its existing CT4 aircraft as an option when the Basic Pilot Trainer Aircraft Project was re-considered in 1985?  
- If not, why not?
2. Did the RAAF evaluate the proposal submitted in September 1985 by Millicer Aviation against those submitted by Hawker de Havilland and Pilatus of Switzerland?  
- If not, why not?
3. Did the Millicer proposal represent a feasible alternative to the Pilatus PC-9 and the Hawker de Havilland A-10?
4. Does the Milltrainer 350/500 TR fully comply with Air Force Staff Requirement (AFSR) 5044?
5. Are Millicer Aviation's estimates of the acquisition and operating costs of the Milltrainer soundly based?

6. Does the PC-9 not fully comply with AFSR 50447

7. Has the PC-9 a shorter fatigue life than that originally estimated?

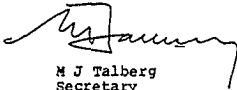
- If so, will this factor require the acquisition of additional basic pilot trainer aircraft?

Although the Committee is seeking answers to these specific questions, your response need not be confined to these matters. There may be other matters raised in Millicer Aircraft's submission on which you may wish to comment.

At this stage the Committee does not propose to conduct an inquiry into these matters.

As the Committee will be meeting in Canberra on Thursday, 21 August 1986, it would be desirable if the Committee was to have your response in time for its consideration at that meeting.

Yours sincerely



M J Talberg  
Secretary  
30 July 1986

APPENDIX C

Department of Defence response to the Committee's questions on Millicer Aircraft's representations, dated 25 August 1986



DEPARTMENT OF DEFENCE

RUSSELL OFFICES  
CANBERRA, A.C.T. 2600

IN REPLY QUOTE

RFP 84/5531  
FSA 739/86

25 August 1986

Mr M. J. Talberg  
Secretary  
Joint Parliamentary Committee  
of Public Accounts  
Parliament House  
CANBERRA ACT 2600



RAAF BASIC PILOT TRAINER

Sir William Cole has asked me to respond to your letter of 30 July 1986 in which you sought responses to specific questions concerning the RAAF's basic pilot trainer aircraft (BPTA) project. Answers to the specific questions are provided below. However, I believe it would be helpful to the Committee, were I to place those comments in perspective by summarising the current status of the project.

The Commonwealth entered into a production contract with Hawker de Havilland (HdH) on 10 July 1986 for the licensed manufacture of 57 PC-9 aircraft. Under the terms of the contract, HdH will enter into subcontracts with Pilatus for the supply of two aircraft and other aircraft components for the lead-in-element of the Australian production programme, and with GPF for the production of PC-9 fuselages. HdH will also let contracts for vendor supplied items. The first aircraft is due to be accepted by the RAAF in June 1987.

Q1 - CT4 Life of Type

Yes. When the BPTA project was initiated in the late 1970s, CT4 life-of-type was expected to be reached by about 1989. Aeronautical Research Laboratories, has since conducted exhaustive fatigue tests and demonstrated that life-of-type could be extended well into the 1990s under existing flight load

136

spectra. This was taken into consideration when contenders for a new trainer were evaluated in 1985 and the option of deferral of procurement of a new trainer aircraft for some years was explicitly considered. That option was rejected by Government.

Q2 - Millicer Aircraft Proposal September 1985

Yes. The unsolicited information supplied by Millicer Aircraft was evaluated as far as was possible given that it did not provide the extent of engineering or cost detail required of the tendering companies. The proposal was rejected because it indicated that although the design was based on the CT4 it was only at the conceptual stage and would have required extensive development and trials. It clearly evidenced that significant Commonwealth support outside the Company's indicative costs would be necessary. In procedural terms the proposal was outside the restricted tender process that had been specified by Government.

Q3 - Was it a Feasible Alternative?

No. The data packages supplied by Millicer Aircraft were supported by oral briefings. Collectively the information received confirmed that the Company's bid would not have provided an aircraft that would have met the RAAF's requirement. The re-engined CT4 proposal did not imply an aircraft with the characteristics required for at least 100 hours of productive flying training as required by Air Force Staff Requirement 5044 and did not represent a feasible alternative to the proposed PC-9 or A10B.

Q4 - Compliance with AFSR 5044

No. Although the Company's description of the Miltrainer's characteristics, appears to indicate compliance with the Staff Requirement, evaluation by Air Force Technical Services Division of the data provided by Millicer Aircraft did not bear out that the Miltrainer (as it is now known) 350/500 TR would comply. The design was still very much at the conceptual stage and until the aircraft was fully designed, manufactured and proven through a test flying programme, its compliance could not be finally adjudged. Consequently, a high level of technical and cost risk would have to be attributed to the likelihood of compliance.

Q5 - Miltrainer Cost Estimates

No. While the operating cost estimates suggested by Millicer Aircraft appears to be of the right order, the acquisition cost estimates provided did not enable full project costing to be calculated. Many applicable project cost elements simply were not addressed. Furthermore, those cost elements that were detailed did not allow for the risk that is inherent in any developmental project.

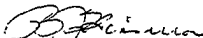
137

Q6 - PC-9 Compliance with ASFR 5044

Not in any significant way. The PC-9 has been flown and flight characteristics assessed by RAAF pilots. The aircraft has also be subjected to a full engineering evaluation and its broad compliance with ASFR 5044 confirmed. The PC-9 does not fully comply with the Staff Requirement in respect of maximum sink rate on landing, stalling speed and endurance but the non-compliances are not significant in regard to the planned training role envisaged for the aircraft. In these respects the PC-9 matches similar aircraft used in the training role elsewhere and the significance of the requirements is reduced as the extended fatigue life of the CT4 will enable it to be retained as an initial trainer.

Q7 - PC-9 Fatigue Life

No. There is no basis for the Millicer Aircraft Pty Ltd assertion that PC-9 fatigue life is non-compliant and that, as a result, additional aircraft will have to be acquired to meet the RAAF's required fleet in-service life of 20 years. Pilatus has provided a written guarantee that the ASFR 5044 fatigue life of 8000 hours per aircraft will be achieved.



R. J. KINSELLA  
First Assistant Secretary  
Financial Services  
and Audit Division