



Submission No 15

Inquiry into Australian Defence Force Regional Air Superiority

Organisation: Department of Defence

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Minister for Defence

The Hon Bruce Scott MP
Chair
Joint Standing Committee on Foreign Affairs
Defence and Trade Defence Sub-Committee
Parliament House
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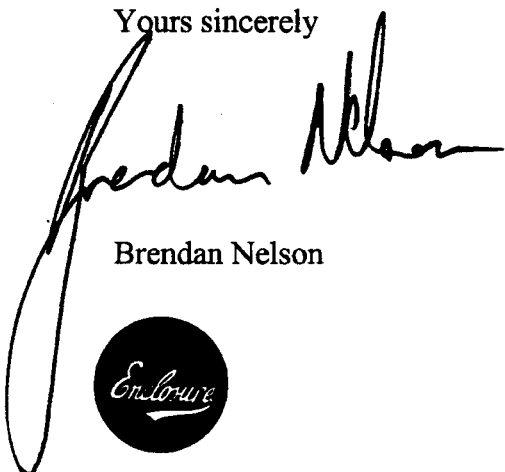
Dear Mr ~~Scott~~ ^{Bruce}

Thank you for your letter of 30 November 2005 to my predecessor, Senator the Hon Robert Hill, concerning a submission to the Joint Standing Committee on Foreign Affairs, Defence and Trade Defence Sub-Committee on *Australian Defence Force Regional Air Superiority*.

I enclose a paper prepared by Defence in response to the terms of reference of the inquiry for your information.

I trust this information will be of assistance to you.

Yours sincerely


Brendan Nelson



ROYAL AUSTRALIAN AIR FORCE

AIR FORCE AIR COMBAT CAPABILITY PAPER FOR JOINT STANDING COMMITTEE ON FOREIGN AFFAIRS, DEFENCE AND TRADE

A REVIEW OF THE ADF'S ABILITY TO MAINTAIN AIR SUPERIORITY IN OUR REGION TO 2020

BACKGROUND

1. As identified in the Defence White Paper 2000, "air combat capability is the single most important capability for the defence of Australia ...". Australia's ability to maintain air superiority in our region is therefore a topic of critical importance for Australia and Air Force welcomes public discussion on the topic and the opportunity to talk about how that ability will be maintained.

2. The Joint Standing Committee on Foreign Affairs, Defence and Trade (JSC FAD&T) considered the review of the Defence Annual Report 02-03 on 15 December 2003. An element of the JSC FAD&T Defence Annual Report 02-03 focused on the Australian Defence Force's air combat and strike capability, with particular reference to the early retirement of the F-111 force in the 2010 timeframe. Subsequently, following a private submission to the Committee, the then CAF with an expert team, attended a closed meeting of the Committee on 23 March 2004, to provide classified information and to address some Committee member issues relating to Defence's planning for current and future Air Force air combat and strike capability. Further meetings were held in June and August of 2004 and a publicly releasable document was provided to support committee deliberations. The Committee tabled its report on 11 August 2004 with two recommendations relating to air combat and strike. The recommendations were:

- a. at the start of the next Parliament, the Minister for Defence requests the committee to conduct an inquiry into the ability of the Australian Defence Force to maintain air superiority in our region to 2020, and
- b. the Government should make a statement focusing on:
 - i. the most accurate delivery date for the replacement combat aircraft;
 - ii. the implications this date will have on the decision to retire the F-111 in 2010;
 - iii. the need to ensure that key upgrades and deep maintenance on the F-111 continues through to 2010 with the possibility of extending the lifespan should the need arise; and
 - iv. the measures the Government will take to ensure that Australia's superiority in air combat capability in the region is maintained.

3. In November 2004 the Government responded to the JSC FAD&T recommendations relating to Air Force air combat and strike with the following:

- a. The first of the air combat and strike recommendations was not agreed as the Government's position was that:

- i. the Defence Capability Plan (DCP) makes sufficient provision to maintain Australia's air combat capability at a level at least comparable qualitatively to any in the region, and
 - ii. the Government continues to monitor regional developments and, where there is a need to, the Government would adjust the DCP.
- b. The second recommendation was partially agreed and the Government stated 'that the ADF New Aerospace Combat Capability is an important issue on which announcements by the Government can be expected at key milestones. Similarly, the Government will make relevant announcements relating to other air combat capabilities such as F/A-18 Electronic Warfare Self Protection, Tactical Air Defence Radar Systems, Airborne Early Warning and Control'.
4. In June 2005, the Senate resolved that the following matters be referred to the JSC FAD&T for inquiry and report with the following Terms of Reference (ToR):
- a. the ability of the Australian Defence Force to maintain air superiority in our region to 2020, given current planning; and
 - b. any measures required to ensure air superiority in our region to 2020.
5. This paper provides the Department of Defence's submission to the JSC FAD&T inquiry on air superiority in our region to 2020.

Definitions

6. The Department of Defence's submission is based on the following definitions of two critical terms referenced in the ToR, including:
- a. air superiority, and
 - b. our region.

Air Superiority

7. Air Superiority is defined by Defence¹ as "that degree of dominance in the air battle of one force over another that permits the conduct of operations by the former and its related land, sea, and air forces at a given time and place without prohibitive interference by the opposing force."
8. Thus, the Defence interpretation of the term "Air Superiority" may include a time limitation, a limited area of operations or a constrained airspace. In other words, air superiority need only be achieved when and where necessary to allow Defence activities to be undertaken without prohibitive interference.

Note: Air superiority should not be confused with "Air Supremacy" which is defined as "that degree of air superiority wherein the opposing air force is incapable of effective interference". For an Air Force to achieve air supremacy means that air superiority can be maintained over an area indefinitely and tends not to have either time, limited area or airspace limitations. It generally implies that the opposing Air Force capability has been destroyed.

This is an important distinction to make, given the geographic area in which Australia may operate and the wide range of operations that may need to be conducted.

1 ADFP 101 Glossary

9. As a corollary to the definition of Air Superiority, maintaining air superiority implies the need to achieve air superiority for the purposes of specific operations. For example, if a ship is transiting from Port A to Port B and requires air superiority for its transit to protect a specific cargo then air superiority would imply that the ship would be protected from attack from the air for the duration of the transit. Note that this might be achieved using an Air Warfare Destroyer (AWD) in escort or by flying air superiority fighters overhead in a combat air patrol (CAP) or a combination of AWD and CAP.

Our Region

10. The definition of the 'region' for the purposes of this submission is the same definition used in the 2000 Defence White Paper, from which the capability goal of 'maintaining air-combat capability at a level at least comparable qualitatively to any in the region' arises. This equates to the nations and environs of South East Asia and the South West Pacific. Note that operations beyond 'our region' would be as part of a wider coalition and any capability comparison would require a comparison of the coalition capability rather than just that of Australia.

DEVELOPING AN EFFECTIVE AIR SUPERIORITY CAPABILITY

Air Superiority

11. Air superiority, when undertaken by air forces, can be achieved through offensive and defensive counter air operations augmented by command and control and battlespace awareness capabilities.

12. Offensive Counter Air (OCA) operations. OCA is designed to reduce or destroy an enemy's potential to conduct its own control of the air. OCA includes both air-to-air and air-to-ground missions all of which could be supported by critical force multipliers such as the integrated air operations centre for command and control, Airborne Early Warning and Control aircraft and ground-based sensors and systems for situational awareness and air-to-air refuelling aircraft for enhanced reach and persistence. OCA includes airfield strike and sweep (destroying the enemies airborne Air Defences that are protecting vital assets). Capabilities required to conduct effective OCA operations are very similar to those required for strike operations, noting that in the case of OCA enemy defensive systems are likely to be still in place.

13. Defensive Counter Air (DCA) operations. DCA is designed to reduce the effectiveness of enemy air attack by destroying or neutralising his intrusive air power, which could be supported by critical force multipliers such as the integrated air operations centre for command and control, Airborne Early Warning and Control (AEW&C) aircraft and ground-based sensors and systems for situational awareness and air-to-air refuelling aircraft for persistence. DCA normally includes Area Defence, Point Defence and High Value Airborne Asset protection.

14. Command and Control. Command and control involves the process of generating knowledge from information, then decisively acting to achieve the desired effects. As with compilation of data to form information, artificial intelligence will play a role in automating analysis of information and speeding up the decision process. The integrated air operations centre plays a key role in planning, replanning and initiating the execution of the air element of the joint plan. The execution of the air element of the joint plan will be passed to the assigned wing operations centres to coordinate the assignment of tasks and to coordinate the detail.

15. **Battlespace Awareness.** Battlespace awareness is the ability to acquire data, fuse it and disseminate the resultant information in a timely manner and is the essential basis for all operations. Battlespace awareness will be supported by both manned and unmanned aerial platforms to provide localised battlespace awareness data. Continuous surveillance and reconnaissance will be carried out by long endurance platforms, including those in space, using sensors with the capacity to collect large quantities of data. Data may be analysed on board the collection platforms or linked to ground stations for comprehensive analysis. With the introduction of the AEW&C into operational service and the integration of other capabilities into a coordinated system, supported by robust ground-based infrastructure, the information cycle will be more timely and effective.

Drivers of the Air Superiority Capability

16. As previously stated in Defence's supplemental submission² to the JSC FAD&T inquiry in 2004, Australia's strategic environment will be shaped by a variety of trends and factors. One of the most important factors referenced in the 2004 submission was the development of more sophisticated military capability entering the region. Defence Update 2005³ reasserts this assessment noting that the trend for increased military capability is more pronounced in North East and South Asia than in South East Asia.

17. Nonetheless, in our region the trend is towards more effective air combat capabilities, including ground-based sensors and weapon systems, enhanced command and control and information capabilities. Noting that the content of this submission will be subject to discussion in a public forum such content has been kept at an unclassified level. As such, no information or comment will be provided on Defence's assessment of specific regional capabilities. Notwithstanding, the air combat capability of a number of air forces in the region have grown steadily in recent years. Many nations in our region are acquiring small numbers of advanced 4th generation air combat aircraft such as the SU-27/30. In order to ensure air superiority in this increasingly challenging environment, Australia will continue its development of a network-enabled force that exploits advanced air systems (including 5th generation combat aircraft) and communications and information technology.

18. The Air Force system comprises key components of the overall ADF system providing sensors; offensive capability; command, control and communications infrastructure and architectures. Defence is moving away from a platform centric approach to warfare and is moving towards a network centric approach with emphasis on information and knowledge superiority. This will be achieved by careful design of the system architecture and, by exploiting data link information technology, we will be capable of displaying a common picture of the engagement between all participating sensors, 'shooters' and command and control nodes. The outcome will be improved situational awareness for all participants, as vital information on adversary movements will be passed pictorially in real-time. That is not to say that Defence will be ignoring relative platform characteristics. Indeed, Defence will need to manage individual platforms and systems as component parts of these synergistic over-arching combat systems.

19. The new Australian Defence Force headquarters at Bungendore and its integrated air operations centre will be a key component of this networked system. Improved and common situational awareness will markedly improve Air Force air combat lethality and survivability in both the air control and the strike environments. An effectively networked Defence air

2 Air Force Submission to JSC FAD&T Consideration of Input to Defence Annual Report 2002-03, Air Combat Capability, AM A.G. Houston, June 2004

3 Australia's National Security - A Defence Update 2005, CoA 2005, p5

combat system, coupled with a fifth-generation stealth fighter, will enable our air combat crews to *see first, shoot first and kill first*.

The Plan for the Future Air Force Air Combat Capability

20. The Air Force supplemental submission to the JSC FAD&T inquiry into the Defence Annual Report 2002/03 discussed the plan at the time for major equipment upgrades and new equipment acquisitions to 2020 to support the Air Force air combat system. Development of the Air Force air combat capability was in two phases from our current capability, through an enhanced capability to a future capability.

Current Air Force Air Combat Capability

21. The current Air Force air combat capability consists of a fleet of 21 F/RF-111C long range strike and reconnaissance aircraft, 55 F/A-18A multi-role fighters and their associated training aircraft. This offensive air combat fleet is supported by the Air Operations Centre at RAAF Glenbrook for operational C² while tactical C² is managed through either mobile or fixed regional operational centres. In addition four aged B707 air to air refuelling tankers provide a degree of persistence and the Jindalee Over-the-horizon Radar Network (JORN), and assorted microwave radars provide battlespace awareness sensor data, supported by the AP-3C Orion maritime patrol aircraft.

22. The Air Force continues to maintain a qualitatively comparable air combat force in the current regional environment. This is achieved through regular software upgrades, programs such as the AGM-142 stand-off weapon and participation in an ongoing program of regional air combat exercises such as Pitch Black, Tandem Thrust and bi-lateral exercises with regional air forces.

23. In addition, high end air combat warfighting activities are exercised on a regular basis with United States and allied forces in the United States such as at exercises Red Flag and Cope Thunder. Participation in Red Flag also allows Air Force to test air combat doctrine and tactics in a realistic, multi source threat environment. The success of this access was proven during our recent air combat deployment to the Middle East when our F/A-18s were integrated into the coalition air combat package without need for significant training, doctrine or tactics adjustment.

Enhanced Air Force Air Combat Capability

24. The enhanced Air Force air combat capability is based on the introduction into service of a number of new systems and upgrades to existing platforms. The most significant are the B737 AEW&C based capability, Airbus A330 Multi-role Tanker Transport and supporting infrastructure, Follow-On Stand Off Weapon, Bomb Improvement Program and upgrades to the F/A-18 Hornet including the aircraft's avionics, electronic warfare systems, structural refurbishment and centre barrel replacements. As previously advised, the withdrawal of the F-111 in the 2010 timeframe is dependent on the successful completion of these upgrade programs. In this period the Air Force Air Operations Centre capability will be integrated into the new Joint Operations Command Headquarters at Bungendore while the tactical C² system will be upgraded through the Vigilare capability upgrade. The resulting C² system will be a major enhancement over the current capability resulting in a substantial improvement of the overall Air Force air combat capability.

Future Air Force Air Combat Capability

25. The future Air Force air combat capability will be based on the New Air Combat Capability, currently envisioned to be the F-35 Joint Strike Fighter (JSF). With data provided

from a broad range of sources including space based sensors, airborne maritime data collection capability and other systems Air Force will have a formidable air combat and surveillance capability. When combined with intelligence, reconnaissance and C² systems, the overall networked Air Force air combat system will be very robust with strength in the physical, information and cognitive domains.

26. The introduction of the JSF will represent a quantum leap in Air Force air combat capability for Australia, both because of the capabilities of the JSF itself and also because what it will bring as part of the overall networked ADF capability. The JSF will be key element of both the sensor and 'shooter' systems in the networked ADF. The key features of the fifth-generation JSF will be its stealth, advanced situation awareness, and enhanced communications capabilities. This capability will ensure that the Air Force maintains the required air combat qualitative edge in the region.

27. Transition to the future capability will be a complex task. While Defence has confidence that the JSF will mature to meet the Air Force's future air combat capability requirements, it is clear that cost, schedule and capability risks associated with introduction of the JSF *decrease* the later we acquire the aircraft. It is also clear that cost, schedule and capability risks associated with the F/A-18 (and the F-111) *increase* the longer we keep the aircraft in service. From an overall Air Force air combat capability perspective, therefore, it is necessary to balance the two sets of risks: the ultimate aim being to maintain a regionally comparable level of Air Force air combat capability with manageable risk in the most cost effective way.

U S Quadrennial Defence Review

28. The 2005 Quadrennial Defence Review (QDR) is a comprehensive review of United States military strategy, infrastructure and associated programs. Pentagon leaders have directed the review team to include in the QDR, an assessment of air dominance and tactical aircraft. This has led to considerable public debate and speculation on the future of a number of key United States Air Force programs including the JSF.

29. While there has been no official public release of the QDR outcomes from the United States Government there has been strong support for the program throughout the review. Defence anticipates that the outcome of the 2005 QDR will be made available in the 1st quarter of this year.

CONCLUSION

30. The Defence Capability Plan (DCP) makes sufficient provision to maintain Air Force's air combat capability at a level at least comparable qualitatively to any in the region, and the Government continues to monitor regional developments and, were there a need, the Government would adjust the DCP. Further the ADF New Aerospace Combat Capability is an important issue on which announcements by the Government can be expected at key milestones. Similarly, the Government will make relevant announcements relating to other Air Force air combat capabilities such as F/A-18 Electronic Warfare Self Protection, Tactical Air Defence Radar Systems, Airborne and Early Warning and Control at key milestones.

31. The Air Force continues to maintain a qualitatively comparable force in the region through a combination of platform and system enhancements as well as participation in an ongoing program of regional air combat exercises and bi-lateral exercises with regional air forces.


32. Australia's current air superiority capability meets the current White Paper requirement for 'maintaining air-combat capability at a level at least comparable qualitatively to any in the region'. This level of capability will be improved as we move from the current level of Air Force air combat capability through an enhanced capability, based on the upgraded F/A-18 force, to the future force based on the F-35 JSF.

33. While the JSF will provide a quantum leap in fighter capability over the F/A-18 in a platform sense, the future air superiority capability will be the product of a wider ADF combat system. The major improvements in sensor systems including space based systems, new airborne systems such as the multi-mission maritime aircraft, unmanned aerial vehicles, upgraded ground systems such as JORN and microwave radars enable the fusion of data from multiple sources providing more timely and effective situational awareness.

34. Integration of the command and control and sensor systems with the Air Force air combat capability will enable the ADF to have a sufficient margin of superiority for success in combat and the capacity to provide air defence and support for deployed ground and maritime forces in our immediate region.



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 Jan 06