

2010+ Air Power futures

Dr Carlo Kopp



Unprecedented changes in the strategic position of Asian countries in recent times is yet to have any impact on force structure planning for the Australian Defence Force, particularly the post-2010 makeup of its air power assets and combat capabilities.

A decade ago, no nation in Asia had the military reach to project any kind of meaningful air power into Australia's sea-air gap, let alone against targets on the continent. This highly secure position is now changing. Both China and India are acquiring or fielding such capabilities, and smaller regional nations such as Indonesia are also

responding with buys of longer ranging aircraft. A region equipped with hundreds of long-range Sukhoi fighter-bombers, dozens of aerial refuelling tankers, AEW&C aircraft, and now most likely Backfire bombers is a very different environment to that enjoyed by Australia a decade ago.

The coming decade will see many fundamental changes in the Defence Force structure, with the introduction of a number of new assets, and the likely loss of other assets. These developments reflect in part the modernisation of the existing fleet, but also implicit changes in the focus of ADF capabilities.

The JSF is the currently shortlisted single type replacement for the F-111 and F/A-18A. RAAF planning envisages this aircraft used in a much broader range of roles than its US operators plan to.

The RAAF Combat Fleet Post-2010

The RAAF's Air Combat Group currently operates 71 F/A-18A Hornets, plus 27 of a pool of 34 F-111C/G. Four Boeing 707-338C tankers are equipped to refuel the F/A-18As. The Hornet squadrons are tasked with air superiority, and with strike, battlefield interdiction and close air support. The F-111C/G is tasked with long-range land and maritime strike, battlefield interdiction and close air support. The AP-3C 'Orion' supplements the F-111 in the maritime strike role.

The F/A-18A fleet is currently undergoing the latter phases of the HUG (Hornet Upgrade) program. Earlier stages of this program introduced the newer APG-73 pulse Doppler multimode radar, the AIM-120B AMRAAM BVR missile, the ASRAAM WVR missile, new computers and displays. The latter phases plan to introduce the JHMCS helmet mounted display. Original planning envisaged that the F/A-18A would be progressively replaced after 2012 with a new fighter aircraft to be selected under the AIR 6000 program but this was preempted by a decision to shortlist the replacement down to the Joint Strike Fighter alone.

Current planning envisages that most likely early blocks of the F-35 Joint Strike Fighter would be supplied in the 2012 timeframe, but this will depend upon whether the F-35 in that configuration will be available, and indeed combat capable. While current statements indicate an interest in acquiring 100 JSFs, the actual number remains to be determined. The publicly stated intention is to perform fuselage re-barrel work on the F/A-18A fleet – should delays in JSF delivery force retention of the F/A-18As beyond their currently available airframe fatigue life.

Without doubt the largest single force structure change planned for the RAAF is the early retirement of the F-111C/G fleet. Introduced in 1973, original planning for the F-111 envisaged that it would remain in service until 2020, with the fleet being progressively wound down after 2015 for a final withdrawal in 2020.

The F-111 currently provides around one half of the RAAF's effective strike capability, calculated using a range of measures. Public statements by Air Force indicate that its withdrawal in 2010 will effectively reduce capability, measured against levels planned in the 2000 White Paper, by around 40 per cent. These



statements are based upon optimistic assumptions about what fraction of F/A-18As can be committed to strike operations alone.

Current RAAF planning envisages the role of the F-111 assumed by the F/A-18A, refuelled by five new Airbus A330-200 Multi-Role Tanker Transports, and by equipping the AP-3C Orion with the new AIR 5418 Follow-On Stand-Off Weapon. The intent is to equip the F/A-18A with the AIR 5409 Bomb Improvement Program weapon, likely a JDAM or EGBU-10/12, and the Follow-On Stand-Off Weapon.

While the recently ordered A330-200 tankers are formally counted as Aerial Refuelling and Air Logistical Support assets, in practical terms they represent the backbone of the combat fleet as the fighters critically depend upon them for range and on station persistence. The A330-200 is a respectable tanker, with boom and dual pods to provide multi-point and multi-system capabilities, and providing around 30 per cent more offload capability than the smaller and faster US Air Force KC-135R. Unfortunately, the currently planned number of tankers provides only an incremental improvement over the existing fleet. While the A330-200 is much more effective in offload performance, five aircraft provides for only one more additional aircraft on station during combat operations.

The actual composition of the RAAF's combat fleet in the 2010-2015 time window, and post-2015, will depend to a large extent on what Defence policy is adopted in the next term of Parliament. The current force structure model envisaged by the ALP is one in which the F-111 is retained until at least 2015, while the Coalition have espoused to date the position presented by Defence, in which the F-111 is to be retired around 2010, with its follow-on upgrades to fit the AIR 5418 Follow-On Stand-Off Weapon cancelled.



The F/A-18A recently received the APG-73 radar, AMRAAM and ASRAAM missiles, an IFF interrogator and new computers and displays under the HUG program. The plan for early retirement of the F-111 sees a full Mil-Std-1760C capability added to the F/A-18A and the AIR 5418 Follow-On Stand Off Weapon and AIR 5409 GPS aided bombs integrated.

Opposite Page:

The RQ-4 Global Hawk has been publicly canvassed as a candidate for a yet to be fully defined HALE UAV fleet, intended to supplement the AP-3C and provide additional reconnaissance capabilities. Future payloads could include electronic/signals intelligence and communications and networking relay systems.



Defence seem firmly committed to the adoption of the JSF as a single-type solution to perform air superiority, air defence, long range strike, maritime strike, battlefield interdiction and close air support. This is an important departure from US thinking, which largely confines the Joint Strike Fighter to battlefield interdiction and close air support roles.

Whether the JSF is eventually introduced will also depend to a large extent on what Defence policy is adopted in the next term of Parliament, as it is better suited to coalition warfare than the traditional regional defence doctrine of the RAAF.

If current plans are implemented, post-2015 the RAAF will have increased combat fleet capabilities in close air support and battlefield interdiction roles, at the expense of air superiority, air defence and long range strike roles. It will also have reduced its overall strike capability, by reducing the fleet's total uplift capacity in precision guided weapons.

The ADF Rotary Wing Fleet Post-2010

The Army/Navy rotary wing fleet will see major changes as AIR 9000 is implemented. At the time of writing the decision on whether to extend/relife/upgrade the Blackhawk fleet to UH-60M configuration, or to replace with NH-90s was yet to be announced. The Army's new Armed Reconnaissance Helicopter, the Tiger, is progressing and should be introduced before the end of this decade. Whether further CH-47D Chinooks are to be acquired remains to be seen. The inevitable reality is that air mobility remains an area of weakness in the Army force structure and longer term there will be ongoing pressure to strengthen troop lift and replenishment capabilities.

Longer term issues remain with replacement and/or life extension of the Navy rotary wing fleet, comprising primarily a mix of S-70 Seahawks, remaining Seakings and the recently acquired but controversial Seasprites.

There is little doubt that the ADF rotary wing fleet should be rationalised, but there is a real challenge in reconciling the very diverse mix of roles and consequent needs against a fleet structure which has a small number of types. It is unfortunate that the complexity and diversity of roles in this problem has not been recognised by many public critics of policy in this area.



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The RAAF ISR Fleet Post 2010

The composition of the RAAF's Intelligence Surveillance Reconnaissance (ISR) fleet in the 2010 to 2015 time window is only marginally clearer than that of the combat fleet.

At this stage, a firm commitment exists to introduce six Boeing Wedgetail AEW&C aircraft, tasked with airborne early warning and control against opposing aircraft and cruise missiles, and providing a supplementary long range maritime search capability. The Wedgetail provides the only real area of significant growth in RAAF capabilities over the coming decade, and with six aircraft the RAAF is approaching a fleet size that can be genuinely effective in combat. The Wedgetail is equipped with a long range MESA L-band phased array radar, an ESM suite, and a comprehensive package of digital and voice communications equipment. Of all of the RAAF's currently planned future capabilities, the Wedgetail is perhaps the only one that has enjoyed undisputed support in the current defence debate.

Public reports claim that two AP-3C and one C-130H were modified as signals intelligence (SIGINT) gathering aircraft with a classified mission package. There are no stated plans for a follow on SIGINT capability, based upon a newer platform. This capability will need to be replaced as the AP-3C and C-130H are eventually retired.

The backbone of current maritime and electronic reconnaissance capabilities is the fleet of Lockheed AP-3C Orions, which received a comprehensive mission avionics upgrade during the 1990s, including the highly capable Elta ALR-2001 ESM system. While these aircraft are nominally tasked as maritime patrol/strike and anti submarine warfare assets, in practice they are primarily tasked with maritime ISR activities. The principal issue for the AP-3C fleet will be its fatigue life and operating costs, and available data to date indicates that replacement or airframe relifing will need to occur post-2015. The most likely candidate for a replacement would be the new Boeing Multi-mission Maritime Aircraft (MMA), based on the 737-800 airframe, although budgetary constraints arising from combat fleet replacement during this period could force further life extension of the AP-3C.

There has been an in principle public commitment to acquire a High Altitude Long Endurance (HALE) UAV as a persistent long range land and maritime reconnaissance asset, with high resolution radar, moving target indicator radar and electro-optical capabilities. The RQ-4 Global Hawk has been publicly cited, but no commitment exists at this time. The HALE UAV would be employed for maritime surveillance to reduce the flying load on the AP-3C, but also tasked with strategic reconnaissance roles. A HALE UAV such as the Global Hawk could be



equipped with other payloads, such as electronic/signals intelligence gathering equipment, or communications relay and networking equipment.

Tactical reconnaissance using fast jets was originally planned to be provided by a retrofit of new radar and electro-optical equipment on the RF-111C or F-111C. However, with the planned early retirement of the F-111 there does not appear to be a cohesive strategy for addressing this capability longer term. Public statements on the use of the internal radar and electro-optical systems on the Joint Strike Fighter do not account for the limitations in that strike optimised package.

It is envisaged that networking using the JTIDS/MIDS datalink system will be introduced on the F/A-18A and Wedgetail by 2010. This datalink will provide good resistance against moderate levels of jamming, and highly flexible capabilities to transfer targeting and situational awareness data from the AEW&C platform to fighters. However, there is no reason to believe that its capabilities will significantly offset the introduction of Russian datalinks on competing regional fighters and AEW&C platforms.

Like the future of the combat fleet, there remains considerable uncertainty in what capabilities the RAAF will have in the ISR domain post 2010.

Recently selected by the US Navy over a new built P-3 derivative, the MMA is a possible candidate for AP-3C replacement. Larger and faster than the P-3, the US Navy intends to use it in a mix with the BAMS HALE UAV.



The jewel in the crown of the RAAF's ISR capabilities will be the new Wedgetail AEW&C aircraft, to be flown by a reconstituted 2 SQN. The Wedgetail is the most advanced AEW&C aircraft developed to date, using the new L-band MESA phased array.



The RAAF's current airlift fleet comprises a squadron of C-130H, a squadron of C-130J, the remaining DHC-4 Caribous and, availability permitting, the Boeing 707-338C. No retirement date has been set for the C-130H as yet, and this will depend on remaining fatigue life in the fleet, although reports indicate that a glass cockpit will be introduced to reduce support costs. Stated planning envisages Caribou replacement in 2010, although these flexible aircraft could be extended to 2020 with a turboprop and GA glass cockpit retrofit. The 707-338C will be retired with the introduction of the A330-200.

There has been ongoing speculation on the subject of a heavy RORO airlifter such as the C-17A or A-400M/FLA. While such an aircraft has been a wish list item for many years, its utility in the strategic lift role is generally lower than that of militarised commercial freighter aircraft, while its utility as a heavy in-theatre tactical airlifter will be constrained by the poor quality of most remote airfields across the region.

It is not clear whether the RAAF will opt to fit the A330-200 MRTT with a main deck freight floor and freight door - this would provide a capability to lift over forty tonnes of main deck payload at ranges and speeds well beyond the C-130J.

Historically, the RAAF has used the C-130 for tactical and strategic lift roles. In an era of global deployments, the C-130 fleet has neither the size nor capacity per aircraft to address larger global deployments. A small number of relatively expensive C-17A or A-400M/FLA would much increase capability in the global deployment role, but less so per airframe than larger commercial freighters such as the 747-400SF.

The shape of the RAAF's future airlift fleet will depend to a large extent on future strategic doctrine, and the extent to which future governments are prepared to invest in airlift to support global deployments.

The RAAF Force Structure vs the Region

The strategic changes now being observed are largely a consequence of growing economic strength in Asia and the large scale influx of modern Russian weapons technology. Changes in military strength are most pronounced in the area of air power, coinciding with shifts in regional strategic thinking and associated air power doctrine. Importantly, these circumstances coincide with important changes in the technology base for modern air power - Russia and Israel have been taking an increasing share of a regional market historically dominated by the US and the EU. The environment now developing in the region is more complex strategically, and also more advanced technologically, in relative terms, since that seen during the 1940s. At the root of the changes observed in Asia is the progressive growth of both Chinese and Indian economic and military strength, achieving the level of 'regional superpowers'. While neither will become peer-level competitors to the United States in the foreseeable future, technologically or numerically, both are gaining strength that is out of historical proportion to the growth achieved by smaller regional nations. In turn, these shifting regional power relationships have the potential to produce flow-on shifts in the alignment of smaller regional nations.

While instability arising from terrorism remains an issue on the Indian subcontinent and in South East Asia, this will exacerbate the ongoing shift in relative power away from the smaller regional nations.

The changes in Asia today are increasingly important to Australia strategically, especially in the longer term. A decade ago, no nation in Asia had the military reach to project any kind of meaningful air power into Australia's sea-air gap, let alone against targets on the continent, and at that time there was little vulnerable infrastructure in the deep north.

We now observe a state of affairs whereby China will have a respectable capability to project aircraft and missile power into the sea air gap, and potentially hold at risk targets within the Gascoyne - Pilbara - Darwin arc. If India proceeds with its intent to acquire Russian Tu-22M3 Backfire bombers, it will acquire a similar capability. Concurrently, Indonesia will be acquiring assets capable of striking across the sea air gap, albeit in limited numbers without tanker support. While the current political context does not present hostile intent by any of these nations, the stark reality is that within the next decade all three of these nations will have greater or lesser measures of capability to strike at Australian targets in the north, and to interfere with air and sea traffic in the north.

Current thinking on RAAF force structuring remains firmly 'Indonesia-centric' in regional terms, with a strong bias to providing what amounts to supporting combat assets to US led coalition campaigns well outside the region. The position by some in Defence that direct confrontation with China is "ludicrous" misunderstands the deeper strategic reality that the ability to project power over large distances confers the ability to coerce politically, and to apply pressure to lesser nations in the region to be politically compliant. China has been actively trying to buy influence in the Asia-Pacific, and power projection capabilities into South East Asia merely present a military stick to go with an economic carrot.



The impact of these changes regionally cannot be considered favourable to Australia or its principal ally, the United States. Both nations face the reality of ageing force structure inventories, budgetary pressures on force structure investments – and Australia is further confronted with the difficulties arising from management problems and deskilling in many areas of the Defence apparatus. The current plan for the RAAF's future is fully articulated in only one public document, entitled 'Air Combat Capability', submitted to the Joint Standing Committee on Foreign Affairs, Defence and Trade in early June this year.

It portrays a model in which the RAAF loses its F-111s around 2010, placing all of the combat capability into the remaining 71 F/A-18A HUG Hornets, these supported by six Wedgetail AEW&C aircraft, five A330-200 medium tankers, and some number of Global Hawk or other ISR capable HALE UAVs. It is planned that Joint Strike Fighters will start entering service around 2012, eventually replacing the F/A-18As. Current thinking appears centred in 100 JSFs, although this number could be reduced to pay for additional A330-200 tankers. The F/A-18As are to be armed with a GPS aided inertially-guided weapon such as the JDAM or Enhanced Paveway, and a shorter ranging cruise missile such as the KEPD-350, AGM-158 JASSM or possibly the AGM-84H SLAM-ER.

This force structure model is a good fit for the current and very limited capabilities seen in Indonesia, but it is inadequate should Indonesia acquire a significant proportion of the Sukhoi fighters it intends to acquire. The FS model is wholly unsuited to any contingency involving China in the region: 'killing' aircraft such as the Backfire requires a high performance interceptor airframe, such as an F-111, F-15 or F/A-

22A - not a poor supersonic performer such as an F/A-18A variant or JSF.

The reliance in the force structure model upon low performance F/A-18A and later JSF aircraft for air superiority roles is largely predicated upon a decisive asymmetric advantage in surveillance/AEW&C and networking capabilities, persisting indefinitely. Unfortunately, this asymmetric advantage is rapidly vanishing as all regional nations of relevance, other than Indonesia, acquire AEW&C capabilities. With Russian technology lagging only around 3-5 years behind mainstream Western systems, there is no reason to believe that networking capabilities analogous to the RAAF's planned JTIDS/MIDS/Link-16 system will not be widely used across the region within a decade. The Russians have been building secure datalinks for fighters since the 1960s. There is no reason to believe that Russian-sourced 'anti-AWACS' missiles such as the stretched Kh-31 series, and KS-172 series will not become widely available across the region. Russia is now developing the podded L175V / KS418 high power jammer, intended for use in roles similar to the US Navy ALQ-99 pods carried by the Prowler/Growler support jammers. There is also no reason to believe that such equipment will not be widely sold across the region - an L-band variant would fall directly into the band used by the JTIDS/MIDS/Link-16 network, and would be likely equipment for the intended Su-32 Fullback derived support jammer.

The unrestricted proliferation of advanced Russian technology into this region shows no signs of abating, and the dynamics of the Asian arms race indicate that 'tit-for-tat' and 'me-too' buys will continue indefinitely, limited only by budgets. This can be clearly appreciated by exploring force structure growth across the wider and nearer region.

Conclusions

For practical purposes, the force structure model devised for the RAAF over the last three years is being overtaken by events, with technological growth across the region and unrelenting export-fuelled development effort in Russia. With a JSF acquisition decision planned for 2006, well before representative JSF configurations can be flown, and a wind-down of the F-111 under way, by 2006 the RAAF will be locked into a future force structure for the next three decades. Yet the force structure model can be expected to be inadequate for many critical regional contingencies well before it is fully deployed.

Australia needs a fundamental rethink of its future force structure plans for the RAAF. The regional environment and Russian technology has evolved much faster than analytical predictions performed in the late 1990s projected. This evolution can be expected to continue, and Australia needs to adopt a force structure model that is capable of credibly deterring power projection by regional players into Australia's air-sea gap, and its traditional sphere of influence.

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Current planning envisages the retirement of the F-111 fleet around 2010, a full ten years earlier than the 2020 date envisaged in the Defence 2000 White Paper. The F-111C is currently undergoing the Block C-4 upgrade which sees the retrofit of the Mil-Std-1760 weapons bus, additional VME computers, and the integration of the AGM-142 Stand-Off Weapon. The early retirement plan sees the AIR 5418 Follow-On Stand Off Weapon and AIR 5409 GPS aided bombs shifted to the F/A-18A fleet.