What a difference a decade makes:

Risking the Sustainment capability of the Air Force

Garry Bates

Recently the Minister for Defence, Brendan Nelson, announced the intention to acquire 24 F/A-18F Super Hornet aircraft, at a cost of $A6bn over ten years, as an interim strike capability until the F-35 Lightning II Joint Strike Fighter becomes operational. The response to this announcement among the defence-aware aerospace community generally could best be described as 'shock and awe'.

The funding for the Super Hornet procurement is premised on the current three per cent real growth in defence budget guidance being continued beyond 2015, courtesy of the China-led resources boom and perhaps other aspects of macroeconomic reform in the Australian economy. Yet it is only just over a decade ago that Defence was struggling with crippling budget reductions of minus one per cent real growth as it finally paid off the F/A-18A/B Hornet acquisition – which in turn had been purchased on the premise of 7.5 per cent real growth in the budget guidance of the 1980s. What a difference a decade makes!

But what about sustainment?

The operational protagonists are, quite rightly, debating the relative merits of the Super Hornet as an interim, gap-filling, weapon system in an increasingly advanced regional strategic environment soon to be dominated by the awesome Su-27/30 Flanker family of Russian-made fighters. However, there are even deeper and longer lasting concerns resulting from this and associated air combat capability decisions that have, as yet, barely breached public awareness. One of the most important of these is the sustainment of our future air combat capability, whatever weapon systems are eventually procured; and not just sustainment for and in battle but also sustainment over the long and continually changing period of its life-of-type (usually in excess of 30 years for Australian military aircraft).

Sustainment is a complex concept that has worn many political labels over the years; self-reliance and self-sufficiency being just two of the euphemisms used to partially acknowledge that Australian can never again be totally independent from foreign original equipment manufacturers (OEM). Sustainment in Australian defence parlance refers to the ability to undertake the maintenance, fault diagnosis and repair of ADF equipment fleets. In terms of Australian defence industry it includes the ability to overhaul and upgrade these fleets to ensure the capability remains relevant to, and competitive in, Australia's strategic environment.

A key question, therefore, is what will the 10-year interim Super Hornet procurement add to the overall sustainment capacity of Australia's regional air superiority and general air combat capabilities? As this 24-aircraft fleet is ostensibly intended to cover the early retirement of the F-111 strike and reconnaissance fleets, the answer is disturbing. It will add nothing to our national sustainment capability and, more likely, will have the opposite effect; degradation.

Our hard-won sustainment capability

Those of us with defence force experience in the 1970s will recall what a huge leap of faith the leading-edge F-111 procurement was for the fledgling high-technology capabilities of the RAAF, supporting civil industries and the Defence Science and Technology Organisation (DSTO). However, over 35 years of operating this formidable fleet, the scientific, engineering, technology and logistic communities developed the complex infrastructure that nurtured and matured the F-111 from problem child to king-of-the-block. This was largely achieved through extensive and innovative maintenance and development programs undertaken at the F-111 fleet's home base at Amberley in Queensland. In so doing the military, scientific and industry people involved became unsung heroes of Australian defence capability. The existing RAAF F/RF-111C is no EH-model Holden of the 1960s, to use the analogy poorly employed in certain official public statements. The aircraft have been totally disassembled and rewired with integrated digital avionics, structurally examined and reinforced through Australian-led non-destructive and composite material testing processes, and re-fitted with advanced weaponry never contemplated by its OEM – but which are necessary to meet Australia's

specific strategic security needs. Its ongoing relevance as a modern weapons platform in the twenty first century is a shining tribute to Australian engineering ingenuity.

Probably the most incisive support capability developed for the F-111 was the Weapon System Support Facility (WSSF) a future-looking capability to integrate mission system software into the aircraft together with new weapons and operational tactics. The WSSF has been used to integrate the AGM-142 missile, model the incorporation of the more powerful TF-30 P109 engine, and create a Mission System Simulator from a salvaged cockpit crew module to name a few publicly known achievements.

Is this done with other aircraft fleets in the ADF? Of course it is, but not to the same level of independent expertise. The then unique WSSF capability was subsequently mimicked by the F/A-18 Hornet in the Integrated Avionics Support Facility (IASSF) and then the AP3C Orion Mission System Support Facility (MSSF) – but to a lesser level of integration ability in those platforms because of the reliance on US sourced software updates. The F-111 integrated engineering and logistic support capability remains the only total sustainment system in the RAAF, although the F/A-18 A/B Hornet is not too far behind. This has been achieved in Australia by Australians for Australians, supported where necessary by appropriate contractual arrangements with OEMs.

Sustainability at risk

Now back to 1991, the then Government introduced the Defence Commercial Support Program (CSP). The stated policy was to transfer all defence force and departmental non-combat support capability into the hands of civil industry. The main intention was to save money. But another stated intention was supposedly so Australia could face future strategic uncertainty with a far broader industrial base that could expand to meet foreseeable and unforeseeable strategic needs (remember that line). Significant cost savings were decreed and harvested, sometimes in advance of contract letting and at variance to actual savings achieved. This was a period of considerable resource austerity with programmed flying hours reduced to 'minimum safe' allocations and all operational exercises and deployments substantially curtailed.

Progressive ADF personnel reductions were mandated and associated funds withdrawn from the budget on an annual basis. The initial Air Force CSP activity was focused mainly on aircraft and supply depots; the facilities responsible for the overhaul, storage and distribution of all equipments from aircraft and missiles to ground radars, vehicles and plant. The F-111 support infrastructure at No 3 Aircraft Depot at Amberley was a major target in this undertaking and the existing and very substantial TF-30 engine workshop was successfully won by an 'in-house option' against commercial tenders. Other elements of the infrastructure were deemed combat-support (deployable or otherwise directly vital to combat efforts) or not classed as commercially viable.

Then in 1996 the Government undertook the Defence Efficiency Review (DER) which was a study very hurriedly undertaken over the Christmas period to enable the Minister to announce his Defence Reform Program (DRP) early in 1997. The stated policy of the DRP was to focus defence personnel only on combat and combat-related activities by out-sourcing all non-combat activity to industry (remember that line too).

In effect, DRP was CSP revisited but this time at the decree of the Government, rather than by the rigorous procedures that had been developed and implemented for CSP tendering and source selection. A key driver of DRP-enforced personnel savings was to fund much overdue spending on capital procurement without increasing the defence budget overall. Supposed financial 'efficiency' was given priority over operational efficiency and the long-term support capabilities needed to sustain it.

The DER was a potential catastrophe for the Air Force as the review had zealously identified all maintenance and support infrastructure, and all base administrative elements, as non-deployable for combat or combat-related operations. This assumption was proven untrue by detailed computer modelling studies to discern the number of uniformed personnel required to sustain the core military operations of the Air Force. These efforts, known as the Members Required in Uniform (MRU) studies, modelled the numbers and specialisations needed to deploy and support the operation of RAAF Force Element Groups in approved operational scenarios.

An all-encompassing re-structure of the Air Force was then undertaken to meet government directions for manpower savings while attempting to retain sufficient ability to support the authorised number of operational deployments in Australia and overseas. Significant transfer of personnel, functions and responsibilities occurred under the Air Force DRP Implementation Plan. This was a 'shock and horror' period for non-aircrew RAAF personnel. The Air Force had already reduced from about 21,500 in the late 1980s to about 15,500 pre-DRP, and was initially faced with a further reduction to less than 12,000 under DER. This was recovered to about 13,500 under the Air Force DRP Implementation Plan but effectively decimated many support specialisations. Subsequent experiences during the relatively low intensity East Timor deployments of 1999-2001, where the RAAF had to operate two air bases in that country and ramp up the combat and support capability of several bases in mainland Australia, showed that clearly insufficient personnel numbers and depth of capability had been retained within the RAAF.

Moving our sustainability base to industry

CSP and DRP also saw almost the entire infrastructure and workforce concerned with F-111 deeper-level maintenance contracted out. This was undertaken by the contracting of No 501 Wing under CSP following the transfer and amalgamation of all F-111 deeper maintenance responsibilities from the former 482 Maintenance Squadron and No 3 Aircraft Depot to this Logistics Wing earlier in the decade. Only the logistic governance functions undertaken by the small Weapon

System Logistics Management Squadron remained an Air Force responsibility with both Service and civilian staff. This contracting involved over 1000 personnel working across some seven business units in about 50 component facilities at RAAF Base Amberley. This was achieved by early 2000, with Boeing Australia Limited becoming the integrating contractor. Substantial numbers of RAAF personnel were transferred to the operational squadrons to meet the demands of operational deployments. The tender did not achieve the mandated minimum 10 per cent cost saving against the status quo, mainly because the RAAF processes in-being had been optimised over many years by numerous quality management reforms to achieve 'world's best practice'.

However, the contractor's proposal to construct the Boeing Aerospace Support Centre at Amberley was favourably received as being consistent with declared Government policy for national industry development. However, the latter infrastructure was not built as intended due to a reduction in the number of AEW&C Wedgetail project aircraft to be retrofitted at Amberley. Nevertheless, the combined contractors (with numerous civilianised ex-RAAF staff) admirably succeeded in delivering an increasing availability of F-111 aircraft for operations, while expanding their resources with defence funds to meet unscheduled maintenance and repairs arising in the F-111 fleet.

Now the Government is to withdraw the F-111 from service by 2010, despite a prior government decision in the mid 1990s to extend the planned withdrawal date (PWD) to 2020. The extended PWD had followed extensive studies and some $A200m in supplementary funding by Government to purchase the identified life-of-type spares and support needed to meet a 2020 PWD. This also included the construction of the Cold Proof Load Testing Facility (CPLT) at Amberley at a cost of some $A25m to facilitate ongoing periodic testing of the aircraft's wing structure under climatically controlled loads and conditions. This facility enabled airworthiness assurance to be established for a further 2000 flying hours or about six years for each aircraft per successful test. I understand that all F-111 wings have subsequently passed the CPLT criteria necessary to achieve the early retirement date of 2010, and were programmed to be subsequently tested to achieve the agreed 2020 PWD. However, this facility is now redundant. Recent Defence claims that existing F-111 wings cannot meet airworthiness criteria beyond 2010 have not been publicly explained by the responsible scientific and engineering community within the Defence Science and Technology Organisation (DSTO). The common belief in aerospace engineering circles is that they have been muzzled because their scientific opinions contradict recent pronouncements from ADF command and ministerial levels.

No apparent migration to the future sustainability base

As the Super Hornet is to be an interim capability, no substantial whole-of-life engineering and logistic support infrastructure will be put in place at Amberley to support the F/A-18F fleet. The media has been advised that 'intermediate maintenance' will be undertaken; but this is a term that was removed from Air Force doctrinal, operational, engineering and logistic lexicons in 1992 under the Blue Print 2020 study. The Air Force uses the terms Operating Maintenance and Deeper Maintenance to distinguish between the support requirements of asset generation and asset preservation respectively. 'Intermediate Maintenance' presumably refers to R3-level servicing carried out by the US Navy on its carrier-based aircraft. It is not deeper-level maintenance and rarely involves component level fault diagnosis or integration of new capability.

Therefore, as a result of this migration from the F-111 to the Super Hornet, the combined efforts of the defence force and defence industry in maintaining and developing the F-111 capability over 35 years, at the specific direction of government, will be terminated. Ministers and senior ADF officers may suggest that the procurement of the F-35 Joint Strike Fighter (JSF) under the New Air Combat Capability (NACC) project will provide the necessary sustainment capability for defence industry. This is a big 'if'. Piece-part manufacture, such as that being contested by Australian manufacturers under the JSF System Development and Demonstration agreement, is in no way equivalent to an integrated engineering and logistic support capability that must be incorporated with the initial procurement process for the weapon system.

If the F-35 is to be the platform for such a support capability, then the phase-out of F-111 support and the introduction of F-35 support should be conjoint, and not negated by an interim capability entailing limited support. Defence now expects first delivery of F-35 aircraft in 2013, with initial operational capability some years later (perhaps as late as 2017-18). With the F-111s gone by 2010, so too will disappear the sustaining mass below the tip of the F-111 capability iceberg. In short, managed transfer of integrated support capability from one type to another will not be feasible.

Neglect of defence and industry sustainment capability

Now remember that in the previous decade, the current Government claimed great political stock for its initiatives to expand the industrial base for Australia's defence support, achieved at considerable resource cost to Defence in implementation. Neither strategic circumstances nor government policy has changed to justify the substantial reduction in Australia's defence industry base for aerospace assets in the next decade. This is an unacceptable outcome for the long-term security of Australia. The use of indigenous technical and logistic knowledge, skills, and expertise is an integral part of our technological development as a nation in terms of key national defence capacities and must certainly not be expunged or diluted. The Australian Defence Force has operated with distinction in past decades, due in no small part to the depth and quality of its integrated support structures and personnel. This critical, although less heralded and appreciated capability in 'behind the front lines support',

should not be allowed to atrophy for reasons of apparent political expedience.

Where have the defence and wider Australian industry champions of the past decade gone? An Australian Integrated Engineering and Logistic Support Plan must be negotiated before the proposed 2008 decision date for formally procuring the F-35 JSF. The negative impact in this regard of replacing the F-111 with the interim Super Hornet must be explained to Government and rectified. Engineering and logistic sustainment capabilities must return to being an integral component of the major capital acquisition and decision making processes. If the then extant process had been followed for the New Air Combat Capability project, perhaps the obvious long-term damage to Australia's strategic defence industry capability would have prevented the decision to opt for early retirement of the F-111.

It might also have avoided spending $A6bn on an interim aircraft of questionable utility. Perhaps even the choice of the F-35 Lightning II, without adequate comparative analysis with the only other fifth-generation aircraft option, the F-22 Raptor, may also have resulted in a different decision; one that had both the operational needs of the weapon system, and long term defence support capabilities, in harmony with the unique strategic requirements of Australia. However, the demise of that process is another story. ◆

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Conference Calendar

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  Speaker: Antony Beevor
  From Stalingrad to Baghdad: History and its Making
  31 May 2007, 7.00-10:30 pm
  Sofitel Hotel, 25 Collins Street, Melbourne
  Enquiries: (03) 9600-4744,
  ghamilton@ipa.org.au or www.ipa.org.au
- **National Archives of Australia Photographic Exhibition**
  Humanity in the Midst of War
  01-27 June 2007
  National Archives, Queen Victoria Terrace, Canberra
  Enquiries: (02) 6212-3604,
  exhibitions@naa.gov.au or www.naa.gov.au
- **International Committee of the Red Cross Seminar**
  Protection and Distinction in Armed Conflict
  07 June 2007, 6-7:30PM
  National Archives, Queen Victoria Terrace, Canberra
  Enquiries: (02) 9388-9039
- **University of New South Wales Gilbert & Tobin Centre of Public Law Symposium**
  Law & Liberty in the War on Terrorism
  04-06 July 2007
  Law Theatre, Faculty of Law, UNSW, Sydney
  Enquiries: (02) 9385-2257,
  gtcentre@unsw.edu.au or www.llwt.unsw.edu.au
- **Australian Strategic Policy Institute Conference 2007**
  Global Forces 2007
  05-06 July 2007
  Federation Ballroom, Hyatt Hotel, Canberra
  Enquiries: (02) 6270-5109,
  lynnegrimsey@aspi.org.au or www.aspi.org.au
- **Royal Australian Navy King-Hall History Conference 2007**
  Naval Networks: The Dominance of Communications in Maritime Operations
  24 July 2007 (Sydney) or 26-27 July 2007 (Canberra)
  Australian National Maritime Museum, Sydney, or Rydges Hotel, Canberra
  Enquiries: (02) 6127-6509 or
  seapower.conferences@defence.gov.au
- **Defence Materiel Organisation Defence & Industry Conference 2007**
  Supplying Nationally, Competing Globally: Performance, Partnerships, Innovation
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  Adelaide Convention Centre, Adelaide
  Enquiries: (02) 6266-7049 or
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- **UNSW@ADFA Conference 2007**
  Defining the 21st Century Warrior: Myth, Reality, Relevance
  24-25 September 2007
  Australian Defence Force Academy, Canberra
  Enquiries: (02) 6268-8871 or
  k.spurling@adfa.edu.au