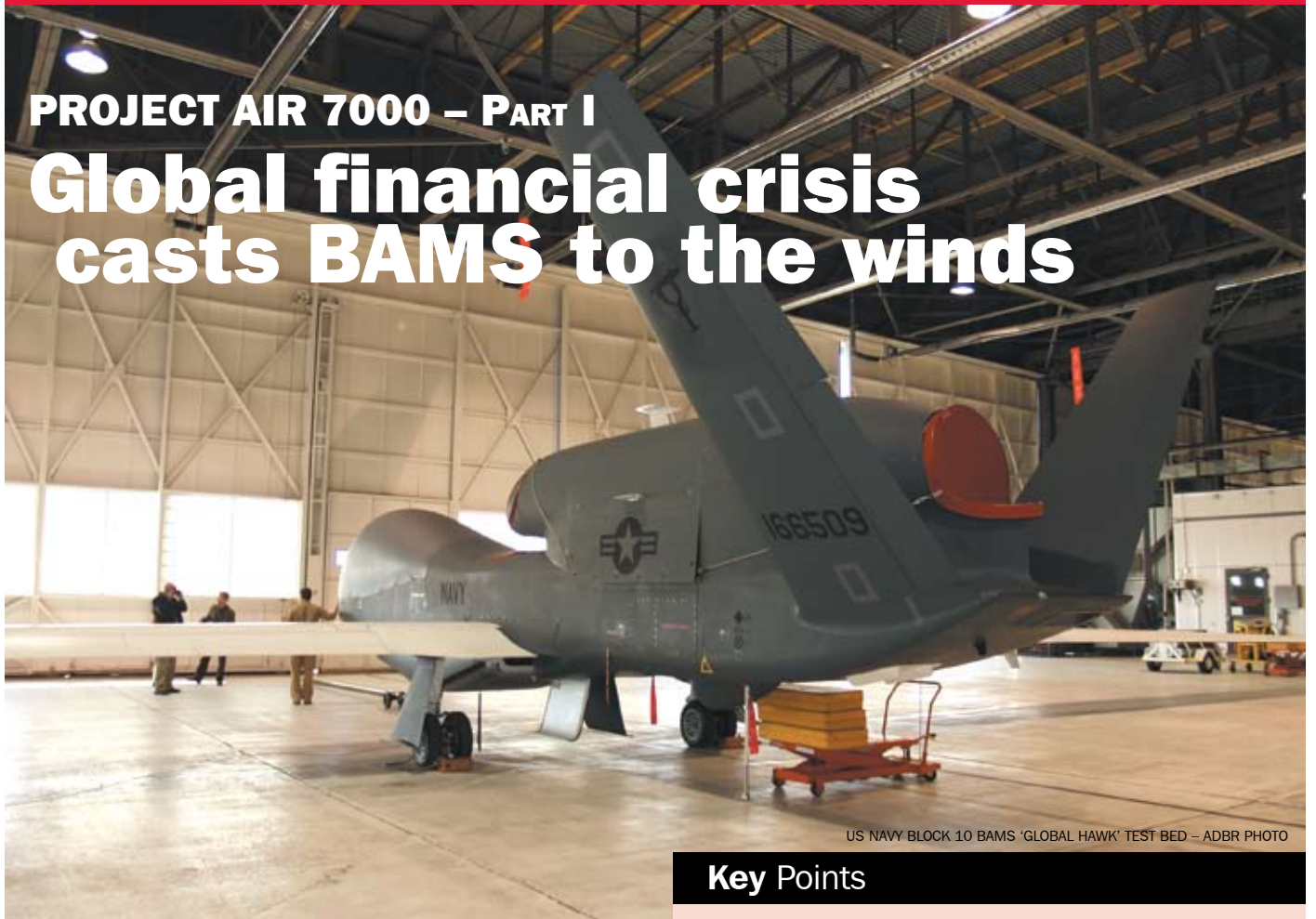


PROJECT AIR 7000 – PART I

Global financial crisis casts BAMS to the winds



US NAVY BLOCK 10 BAMS 'GLOBAL HAWK' TEST BED – ADBR PHOTO

■ Trevor J Thomas/Naval Air Station 'PATUXENT RIVER'

Since the then Parliamentary Secretary to the Minister for Defence, Dr Brendan Nelson, stood google-eyed on the flight line at RAAF Base 'Edinburgh' in April 2001 as an Advanced Concept Technology Demonstrator (ACTD) RQ-4A 'Global Hawk' unmanned aerial vehicle slid silently from the evening skies onto the runway, the Australian Department of Defence has dreamed of utilising such breakthrough technology to help sustain its ability to 'punch above its weight' in the job of defending the nation.

Unfortunately, the Rudd government has resolved to yet again defer a commitment to the acquisition of a 'Global Hawk'-based high altitude surveillance system, by restricting Australia's future exposure to the US Navy's Broad Area Maritime Surveillance (BAMS) initiative to something akin to a 'scientific observation only' exercise.

The decision has disappointed platform vendor Northrop Grum-

man, and falls a long way short of the vision of a unique Australia-only 'Annexe' that hard negotiations had resulted in inserting into the original US Navy capability solicitation.

For an initial US\$300m, Australia was offered a direct cooperative window into BAMS system design, with the ability to take the lead on development of a critical sensor of particular importance to Australia's national security – a ground moving target indicator (GMTI) – able to track enemy formations and assist in the direction of weapons against them.

The entry price for such a highly prized sensor was US\$100m, or one-tenth of the US Government's anticipated development cost, with payments of just twenty million dollars a year spread out in installments over five years.

A further \$200m (making up the total US\$300m development program entry cost), would have seen Australia provided by 2015 with its own 'Global Hawk' platform and custom sensor package, along with a ground station capable of exercising multiple UAV control. The catch was Australia

Key Points

- **The National Security Committee of Cabinet** has decided Australia will not proceed to the next partnership phase of the US Navy's Broad Area Maritime Surveillance (BAMS) program.
- **With original plans to secure an initial operating capability** in 2011 falling by the wayside, the US Navy is now focusing on the second quarter of 2015 to achieve initial operating capability, with a full operating capability envisaged for 2019.
- **BAMS tenderers were required to respond** to a unique Australia requirements 'Annexe', whereupon the ADF was then given a fixed period of time after the BAMS down-select to formally confirm its participation in a cooperative development phase.
- **For a down payment of US\$300m, Australia was offered** a lead opportunity to develop a ground moving target indicator sensor for its own purposes, as well receive an SDD 'Global Hawk' platform with which to begin operational UAS familiarisation.

needed to formally confirm by Christmas 2008 its decision to join the BAMS cooperative systems development and demonstration (SDD) phase.

Declining the invitation to join the BAMS SDD will now see the US Navy move on to rapidly define critical BAMS system design parameters, without substantive regard to Australia's interests. This means that if a future government wished to re-engage the BAMS program at any particular stage, the cost – in terms of retrofit sensor and airframe modifications

– would be much higher than if it had taken up the initial SDD invitation.

The deferral of phase 1B of project Air 7000 also adds to the faltering vision of Australia fostering an integrated national air-based surveillance system for both military and domestic security (including bushfire monitoring), given more recent news the project Air 5077 airborne early warning and control (AEW&C) endeavour is likely to experience a writing down of performance expectations in response to mounting technologi-

cal integration challenges between Boeing's B737 air platform, and Northrop Grumman's multi-function electronically scanned array (MESA) radar.

Whilst successive Australian governments and the ADF have prevaricated on the project Air 7000 high-altitude/long-endurance (HALE) and BAMS commitment, new players and technologies have similarly rapidly emerged seeking to span the MALE to HALE operating space (*see story page 19*).

Prospectively, the new Defence White Paper will contain details of a new 'Roadmap' relating to intelligence, surveillance and reconnaissance capabilities, and outlining a role for UAVs. Still, ten years after a 'Global Hawk' procurement was listed as a sole-source acquisition in the 2000 Defence Capability Plan (DCP), the acquisition of BAMS-type capabilities for the ADF is further away than ever.

As originally detailed by project Air 7000 staff to ADBR at the Northwest Shelf (NWS) unmanned aerial systems (UAS) Trial VIP day in Adelaide as far back as September 2006, the then Howard Government had sought to arrest the faltering HALE UAS acquisition agenda by proposing to revisit the phase 1B component of project Air 7000 – for an 'interim pass' (including nomination of the preferred integrated ground environment tenderer) – in late-2007, as guided by the US Navy's preferred BAMS tenderer down-select decision.

At this time, the Australian Government – and armed with practical and comparative NWS UAS trial data generated by live flying and simulated demonstrations – would either confirm an arrangement for the ADF to follow the US Navy's lead in multi-mission unmanned aerial platform and sensor/systems selection, or elect to abandon the BAMS path for something else.

Fast forward to 2009, and on the back of the change of Australian government in late-2007, the US Navy's original down-select on BAMS being appealed (and subsequently re-confirmed by the US Government Accountability Office – GAO), delays in completion

of the new Defence White Paper mean the Australian Government has run out of time.

Reasonably expecting an SDD commitment last Christmas given Government directions over the course of 2008, the approach of a key systems functional review in June-July 2009 practically set a 'drop dead' date for Australia to make a commitment to the BAMS SDD at the most economic cost.

WHAT IS BAMS?: The concept of broad area maritime surveillance, as an integrated operational system installed on a high-altitude long-range unmanned air vehicle, does not currently exist, albeit defined missions are envisaged as including: maritime surveillance; the collection of enemy order of battle information; battle damage assessment; port surveillance; communications relay; support for maritime interdiction & surface warfare (including targeting); battlespace management and the targeting of carrier launched maritime- and land-strike missions.

The US Navy plans to acquire 68 BAMS UAVs (plus two test articles) to ultimately be based (around 20 vehicles in total) at five sites around the globe: Hawaii (US); Diego Garcia (UK territory); NAS 'Jacksonville' (Florida); NAS 'Kadena' (Japan); and Sigonella (Italy). Operating four UAVs from each site and flying 55,000 hours per year, the aim is to provide the US Navy with substantive global coverage of ocean & littoral areas of interest.

BAMS, however, is only one element of the US Navy's larger Maritime Patrol and Reconnaissance Force (MPRF) being assembled in the quest to secure the provision of persistent maritime

intelligence, surveillance and reconnaissance (ISR) data collection and dissemination.

Hence, 'Global Hawk' UAVs will be operated in partnership with manned maritime patrol aircraft of the ilk of the legacy Lockheed Martin P-3C 'Orion' – but in a future jet-powered iteration known as the P-8A 'Poseidon' multi-mission maritime aircraft (MMA), currently being developed by Boeing.

BAMS had initially been envisaged to achieve low rate initial production (LRIP) beginning in fiscal year 2011 (FY11), and deliveries supporting an IOC in FY14. This vision became a little chequered, however, following the close of the tender on 3 May 2007, which confirmed three lead contenders offering quite different capability concepts.

Northrop Grumman proposed a new version (RQ-4N) of its well known 'Global Hawk' UAS, whilst Lockheed Martin drew on General Atomics Aeronautical Systems' 'Predator B' UAS, with a new wing & sensors – tagged the RQ-9 'Mariner'. Boeing and Raytheon teamed to offer an optionally-manned RQ-37 'Gulf-stream 550' special mission derivative platform.

A subsequently elongated proposal evaluation process by the US Defense Acquisition Board ultimately yielded 22 April 2008 a down-select favouring Northrop Grumman's Block 'X' RQ-4N 'Global Hawk' UAS, with the company since entering an 89-month, US\$1.16 billion contract to advance a SDD phase aimed at yielding two test articles, and associated ground stations.

The Block 'X' terminology is unique to the US Navy, and rec-

ognises this version will be the first true BAMS iteration of the Global Hawk UAS, as compared to outwardly similar (but internally different) models for the US Air Force which is procuring airframe/sensor combinations spanning Block 10, 20, 30 and 40.

The subject RQ-4N BAMS air vehicle is to incorporate an enhanced integrated sensor suite delivering 360 degree coverage from the combination of a spinning, dual array (back to back) electronically scanning radar, and the MTS-B rotating sensor ball turret extracted from USAF (General Atomics-supplied) MQ-9A 'Reaper' UAV.

At the Australian end of the BAMS equation, accumulating trial evaluation delays (as well as the intervention of the 2007 Federal election), ended up necessitating a shift of the phase 1B 'interim pass' consideration point into 2008, assuming the new Defence White Paper would be delivered at the end of that year. Hence, the US Navy's expectation that formal notice to join the BAMS SDD would be received no later than January 2009.

The BAMS commitment decision then ended up being caught up in the new Rudd government's 'all options on the table' review of extant Defence Capability Plan (DCP) projects (as well as any new capability acquisition proposals developed internally by Defence), in respect of their on-going consistency with the political platform put to voters in over 2007, and ultimately, as influenced by the new Defence White Paper now promised to emerge by the end of April.

The scenario outlined above for Australian consideration of



US AIR FORCE BLOCK 20 'GLOBAL HAWK' UAVs AT 'EDWARDS' AFB – ADBR PHOTO

the BAMS program next came undone when Lockheed Martin (LM), in May 2008, revealed it had lodged a formal protest with the GAO in relation to the US Navy's expressed preference for the RQ-4N.

LM officials at the time indicated a belief that their 'Mariner' UAV constituted "a technically compliant and awardable solution at significantly lower cost" than Northrop Grumman, who was further accused – due to substantial USAF orders for RQ-4s – of offering much lower BAMS platform prices to beat out the competition.

As it stands, a raw 'Global Hawk' platform comes in at just under US\$30m a copy, with the costs of sensors and integration – known to be upwards of US\$30m a piece for the most sophisticated types – such as full signals intelligence (SIGINT) fitout – to be added to that price.

The GAO announced 8 August 2008 it had decided to deny Lockheed Martin's protest, with the Naval Air System Command (NAVAIR) subsequently reconfirming 12 August the validity of its evaluation approach in using 'time on station' efficiency principles to judge the RQ-4N came

in well ahead of the 'Mariner' and G550-based offerings.

The GAO report revealed Northrop's RQ-4N 'Australian Option' was priced at US\$240 million, while the Lockheed/GA-ASI 'Mariner' option came in at US\$112 million. Boeing did not disclose its Australian option price, but submitted it would be much cheaper than a 'Global Hawk' sporting full SIGINT features (ie: US\$50-80m in total).

Beyond the merits of the platform and systems themselves, in moving to strike down Lockheed Martin's BAMS appeal, the GAO made particular reference to

50/50 partner, General Atomics Aeronautical Systems Incorporated (GA-ASI), which it said "had recent past performance history of being unable to resolve staffing and resource issues, resulting in adverse cost and schedule performance on very relevant contracts for unmanned aircraft."

Despite the company's success in bringing highly innovative UAVs to the marketplace in the form of its 'Predator'/'Reaper' aircraft, the company's technical contribution to BAMS was marked down (as representing high risk compared to other tenderers) for its past performance history.

>>> page 22

G550 dark horse back in the ISR race?

The US General Accounting Office's evaluation report on Lockheed Martin's BAMS down-select appeal revealed the Boeing/Raytheon G550 solution to have a number of unique and appealing features, making it a strong contender for any 2009 Defence White Paper-based re-evaluation of broader ADF intelligence, surveillance and reconnaissance requirements, or alternatively, the generation of an unsolicited bid in light of the Rudd Government's walking away from BAMS.

■ Nick Merrett/CANBERRA

The GAO's BAMS appeal evaluation report particularly focused on the high degree of commonality the G550 BAMS offered with Boeing's manned P-8A 'Poseidon' multi-mission maritime aircraft (MMA) and contractor logistics support concept. In a world of rapidly shrinking defence capability providers, the P-8A is the only suitable platform capable of effectively replacing the RAAF's fleet of AP-3C 'Orion' aircraft, proposed for replacement from 2018 under phase 2B of project Air 7000.

In the Boeing/Raytheon BAMS submission, the P-8 and G550's mission computing and communications architecture were to be taken from the airborne early warning and control (AEW&C) platform, already under contract for the RAAF via project Air 5077. Further, the operator machine interface in the P-8As ground station was to be the same as that for the BAMS.

The forward operating base was also to provide all the data system support found on the P-8 system, with exactly the same concept of operations (CONOPS) the US Navy adopted when it selected the MMA, and no doubt which substantially influenced ADF 'Poseidon' preference.

Claimed by Boeing to be the only nose-to-tail digitally assembled aircraft in the world, the G550 was to have a cruise speed of 440 knots – while sustaining a sprint of 500 knots – whereas the Global Hawk's cruise speed is rated at 300 knots. The G550's downfall was its 12 hour endurance, whereas the 'Global Hawk' currently maxes out at 34 hours, with 33 hours for the 'Mariner'.

The G550 was said to be able to operate at a maximum altitude of 50,000 feet, with the 'Global Hawk' at 60,000 feet, while the 'Mariner's is 34,000 feet (GAO redacted report), albeit with General Atomics proposing a 22-foot extension of the wingspan to increase its maximum altitude to an undisclosed height.

The G550 also promised a rapid deployment opportunity through civil space (ie: via 'optional manning'), and then could be relaunched in unmanned mode. Boeing's Distributed Information-Centralised Decision (DI-CD) software was proposed to enable autonomous collaboration by multiple unmanned aircraft to determine which vehicle was best suited to perform critical specific mission tasking.

In short, this meant operators would have no longer been burdened by having to manage the specific routing & operating parameters of air vehicles themselves. Boeing IDS also noted it was incorporating BAMS UAS mission scenarios into its Virtual Warfare Centre in St Louis (Missouri), with potential links into the company's distributed environment to further develop concepts of operations and other capabilities.

Assembly of the first G550 fuselage was said to have been undertaken in December 2007 (with

the FAA having certified the outer moulds of the aircraft), with a first flight and delivery (at the time) promised for the third quarter of 2009.

Boeing further claimed it faced no manufacturing difficulties in supplying the required number of BAMS aircraft, as there were already militarised ITAR versions of the G550 being manufactured for the US Navy.

Boeing's BAMS concept and submission was also said to have leveraged the experience of its X-45 UCAS team, as well as the 'ScanEagle' UAV for the unmanned component of the G550. Having amassed more than 750,000 flight hours at submission time, the G550 BAMS was to be powered by two Rolls-Royce BR710 C4-11 engines, utilised Raytheon's belly-retractable full-360 degree multi-mode radar, ESM and EO/IR sensor suite, and Honeywell's vehicle management & control system.

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SPECIAL OPERATIONS G550s – VENDOR IMAGE

The GAO continued, saying the company's record "did not demonstrate (it) had implemented systemic improvements that resulted in improved performance." Noting that Northrop Grumman was not without its own problems on related system development and delivery criteria, the GAO nevertheless concluded, "overall performance of the awardee's team on most evaluated contract efforts was rated better than satisfactory, while the overall performance of the protestor's team on 11 of 26 contract efforts was only marginal."

A closer examination of the GAO report revealed the NAVAIR solicitation had provided for the award of a cost-plus-award-fee contract for the SDD endeavour, with cost-plus-award fee options for low rate initial production (LRIP 1) achievements, and for furnishing the BAMS UAS to Australia.

The award decision was made on four evaluation factors: technical (design approach and program/schedule); past performance; experience; and cost (including SDD/LRIP1 option contract cost, operations and support, production, and the Australian option cost). The technical factor was rated more important than past performance or experience, which were of equal importance, while cost was least important.

NAVAIR assessed the evaluated Effective Time on Station (ETOS) of a four-BAMS 'Mariner' aircraft orbit was 84.6%, the proposed ETOS of a three-'Global Hawk' orbit was 96.2%, while Boeing's proposed ETOS for a G550 aircraft orbit came in at 92.8%. Boeing did not, however, disclose how many aircraft were required to sustain one of their BAMS orbits. The heavily edited publicly released (ie: redacted) GAO report also did not disclose either the number of hours on station or the ingress or egress speeds of the three competing aircraft.

The US Navy specification required that each BAMS orbit had to provide – with no more than three aircraft aloft simultaneously – continuous surveillance capability for a minimum of 24 hours per day for seven consecutive days, with an ETOS of no less than 80%, at a minimum mission range of 2,000nm. Both Northrop and Boeing's proposals were evaluated as having a strong technical advantage over the Lockheed Martin/General Atomics construct.

Apart from having 'significant' strength in the area of ETOS, Northrop's solution was said to have offered a greater persistent ISR capability and significant strength in the area of space, weight, and power (SWaP), including a significantly higher weight

margin (ability to add weight without breaching the ETOS threshold requirements) than Lockheed's offering.

LM's design proposal was evaluated as having a significant weakness for failing to provide a validated computer model of the performance of its proposed single engine with a turboprop propeller.

US Navy PMA-262 BAMS officials briefing ADBR in February at Patuxent River were politely diplomatic in indicating that although conscious of limitations upon Australian Government decision making due to the intervention of the 2007 Federal election and extended gestation of the new Defence White Paper, they were nevertheless anxious to move on with the BAMS program, and hence, were seeking an imminent indication that Australia would take up its special 'Annexe' opportunity.

A key System Requirements Review for the BAMS 'Global Hawk' UAS is already in play (having commenced end-August 2008), with a Preliminary Design Review to be undertaken over 2009, and the Critical Design Review milestone to be performed sometime in 2010.

Subsequent SDD phases will include envelope expansion, sensor validation through to standard operational evaluation of the

RQ-4N, based on pre-specified USN requirements. The trials will occur at the Navy's mobile air station and test range at 'Patuxent River', Maryland (south of Washington DC).

The Australian Department of Defence had placed six people with the US Navy project team during the whole BAMS requirements development process. Unique Australian requirements from this interaction were developed pertaining to operating the UAV in turbulent weather, technologies to prevent icing on the wings (ie: for Southern Ocean illegal fishing & whaling activity surveillance), along with several classified sensor capabilities including the above-referenced ground moving target indicator (GMTI).

This latter sensor is not part of the baseline US Navy BAMS requirement, although would naturally have been of interest if developed upon Australia taking up the lead under the SDD phase. "To separate the [Australian] solution set and then bolt it back on is not going to get an optimum solution for Australia," PMA-262 Program Manager, Captain Bob Dishman, told ADBR.

The US Navy anticipates it will pay around US\$55 million per 'Global Hawk' BAMS system, which includes the aircraft, sen-

>>> page 36

Defence White Paper – Ctd from page 10

DCP, have pointed to an opportunity in the next Budget to revert to a simply expanded strategic statement published in parallel with Defence Portfolio papers, and

advising (upon a decision to defer the DCP to 2010), only those 'first pass' and 'second pass' new military capability acquisition proposals intending to be advanced over the next 12 months.

Such an approach would sensibly give Joel Fitzgibbon extra time to resolve the orientation of the Defence White Paper reflective of subsequent developments in the US in framing up of the QDR,

whilst also allowing for the preparation of a more robust 2010-2020 new capability outlook that is more consistent with a funding horizon that looks past current financial difficulties.

Now that a decision has been made to push phase 1B of project Air 7000 out to the sunset, the next defence capability acquisition item pressing the Rudd Government is a commitment decision to the project Air 6000 Joint Strike

Fighter (JSF) acquisition.

On the current schedule, time is running out for the nation to confirm its participation beyond the current system development and demonstration phase and substantive aircraft manufacturing program, however, funding debates in the US regularly throw a cloud over this program.

Although unlikely to be cancelled, a move to ration JSF funding and extend the testing & validation stage (ie: as repeatedly urged in GAO reports), would raise new complications for Australia. Reversing the decision to phase out the F-111 force from 2010 upon news the first tranche of JSF's would not become operational in Australia from 2015, is almost unthinkable.



NEW PRESIDENT REALLY A FORCE FOR CHANGE?: Addressing the US Congress 25 February, President Barack Obama has said of his Administration, "in words and deeds, we are showing the world that a new era of engagement has begun. For we know that America cannot meet the threats of this century alone, but the world cannot meet them without America. We cannot shun the negotiating table, nor ignore the foes or forces that could do us harm. We are instead called to move forward with the sense of confidence and candour that serious times demand."

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formation exchange capability for the command and control of deployed forces as a primary survivable system, and as a parallel system to satellite communications. The project will replace Naval High Frequency Stations at six sites, replace Air Force High Frequency stations at four sites, upgrade design and performance of the systems replaced, and upgrade selected ADF Mobile platforms.

Mobile platform upgrades include: two Hydrographic Ships; 12 Armidale Class patrol Boats; six Mine Hunter Coastal Ships; 34 'Black Hawk' & six CH-47D 'Chinook' helicopters; three Deployable Minewarfare & Clearance Diving Headquarters; three Defence Force School of Signals, four ICCS and 14 Army Strategic HF units.

On 25 October 2004, the Modernised High Frequency Communications System (MHFCS) core system was formally accepted from then-Boeing Australia, thus marking the inception of the Defence Communications Station (DEFCOMMSTA Australia). The MHFCS has since replaced the HF components of the Naval Communications Stations, and the RAAF Air Operations Communications System stations (AOCS). New capability is being delivered in two stages.

The now completed first stage replaced and rationalised existing facilities at six Navy sites, and four Air Force stations. The second stage is currently in the process of providing increased levels of automation, improved capability, enhanced security and survivability, reduced reliance on staff, and is incorporating the new equipment into mobile platforms.

Some payments to Boeing have been deferred due to failure to meet milestones, and blamed on difficulties with certain complex elements of design and integration and testing. Accordingly, acceptance of the full final fixed network capability (originally planned for 2008), may now be delayed until 2011. Nevertheless, a recent independent technical review is said to have confirmed the viability of the design, and that there are no potential barriers to successful completion.

A schedule review has also been conducted to inform the way ahead, and to enable revised delivery dates to be set. As the difficulties being experienced also affect the design of the mobile upgrade equipment, Defence acknowledges there has been a flow on effect in terms of the completion of upgrades to mobile platforms.

MILITARY LOGISTICS INFORMATION SYSTEM: Joint Project 2077 is being delivered in multiple phases, and seeks to modernise and integrate Defence's logistics information systems. Each phase addresses specific capability requirements, which include supply chain, inventory control and repair and maintenance functions to support the ADF's capabilities in Australia and in all areas of operations. The existing core Logistics system, the Standard Defence Supply System (SDSS), is based on a product developed by Queensland-based Mincom in the 1990s.

Phase 2B.1 of the project is in the acquisition phase and will provide upgraded core software and improved financial management capability. Implementation will occur in 2009. Phase 2B.2 will provide an enhanced deployable capability as well as improved in-transit visibility. Second pass approval for Phase 2B.2 was attained from the Government in December 2006.

The project is currently reviewing the acquisition strategy for this phase with delivery due for completion by 2012. Other phases include Phase 2C that has delivered a radio frequency identification capability that allows the tracking of supplies in transit. This system was successfully deployed within Australia in December 2006 and was progressively deployed to overseas areas of operations from mid-2007.

Phase 2D will deliver major capability enhancements through global industry engagement. Defence Budget papers confirm 'first pass' approval was attained in May 2007, and further consideration is scheduled for early-2009, albeit in the context of the Rudd Government's preparation of the new 2009 Defence White Paper.

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Air 5428 turning towards direct purchase?

Following a pre-RFT 'Market Sounding Process' briefing in Canberra in late-2008, the Department of Defence has sought written feedback from industry on its "appetite" for a 25-year public private partnership (PPP) acquisition strategy for projects Air 5428 Phase 1 (the new fixed-wing Pilot Training System) and Air 9000 Phase 7 (the new Helicopter Aircrew Training School).

Only one month into the global financial crisis (GFC), firms were at the time particularly concerned about their access to long-term finance, with a number indicating they would need to consult foreign parents to assess the availability of funding.

Under each PPP, the private party's primary obligation will be to provide a training service that can deliver a specified number of aircrew personnel each year to a specified rate of effort.

According to a draft Operational Concept Document, the preferred contractor needed to develop the training system, procure and commission the aircraft, operate the training system, maintain the aircraft & decommission and dispose the assets at the end of the contract term – all financed by the preferred contractor.

In return, Defence will pay the selected contractor a performance-based service charge, based predominantly on the availability of the subject training system.

Release of a Request for Expression of Interest for both projects is scheduled for the first quarter of 2010 (Air 5428/1), and fourth quarter 2009 (Air 9000/7) respectively.

Contract signature for both projects in the second quarter of 2012. Initial Operating Capability for the pilot training system and joint helicopter school will be in the second quarter 2015, and 2014 respectively.

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BAMS cast to the winds – Ctd from page 22

sors and communications suite. Each air vehicle is projected to have a life of 50,000 hours.

Latest available project Air 7000 estimates indicate 9-11 BAMS UAVs were proposed to be acquired by the RAAF, in order to sustain the desired capability over a minimum 20-year life. Any subsequent sales of technology developed by Australian industry as part of the SDD, would have seen money coming back to Australia.

The US Navy stood up in mid-February its first BAMS 'Global

Hawk' unmanned aerial system, as part of a joint mission with the USAF's 380th Air Expeditionary Wing at the 'Al Dhafra' Air Base, in the United Arab Emirates.

The Block 10 RQ-4B 'Global Hawk' aircraft (one of two now in USN livery – the other is at NAS Patuxent River), will be launched and recovered from 'Al Dhafra', whilst flights are to be controlled from a mission control element (MCE) located at 'Patuxent River', Maryland.

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CAPTAIN BOB DISHMAN WITH US NAVY BAMS UAV – ADBR PHOTO