The Parliament of the Commonwealth of Australia

Report on the Australian Parliamentary Delegation to the UK, Spain, Germany and the United States

14 April – 3 May 2012

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Canberra

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Foreword

From 14 April 2012 to 3 May 2012 I had the pleasure of being the leader of a delegation consisting of Parliamentarians from the Defence Sub-Committee of the Joint Standing Committee on Foreign Affairs Defence and Trade as part of its *Review of the Defence Annual Report 2010-2011* and the Foreign Affairs, Defence and Trade References Committee of the Senate Standing Committee on Foreign Affairs, Defence and Trade as part of its inquiry into *Procurement procedures for Defence capital projects* referred by the Senate on 9 February 2011.

The key aim of the delegation was to visit countries that design, build and maintain/sustain submarine fleets, deal with large scale Defence procurement issues, and to visit the project office of the Joint Strike Fighter (JSF) and Lockheed Martin.

The delegation found that first-hand inspections and briefings by suppliers and US government officials greatly assisted to better understand the dynamics of supply chains and their implications for Australia's ongoing Defence capability. Additionally, in the context of the current debate on future capability, members of the delegation benefited greatly from gaining an appreciation of the US procurement experience as it continues its own Defence program in the face of increasing budgetary restrictions and continuing volatility in international security.

This report summarises the activities and observations of the delegation. It is useful in this foreword to outline some of the key points that the delegation found. These can be summarised as:

- the need for early engagement of industry at the conceptual and strategic capability planning level;
- the need for centres of excellence in all areas requiring the efficient concentration of scarce levels of high technical skill including systems engineers and systems integrators;
- the importance of early and ongoing test and evaluation before second pass approval;
- the danger for Military-off-the-Shelf (MOTS) and Commercial-off-the-Shelf (COTS) solutions becoming riskier developmental projects;
- the observation that evolving US views and a new commercial approach to foreign military sales appears to be in progress;
- US GAO rules, such as 90% engineering drawing completion, re unproven technology, is maybe a useful discipline although a better approach maybe to require 90% proven technology or even higher by value.
- the importance of intellectual property issues; and,
- in relation to submarines;
  - the clear linkage between design, construction and maintenance and sustainment in the context of building an industry over 50 years.
  - The risks of severely compromising future submarine choices available in Europe by the early selection of weapons and communications systems whereby superior technology may be forgone, not to mention the extreme developmental risks occurring as a consequence. the challenges of obtaining the most recent US intellectual property for use in essentially European platforms

Over the course of the delegation it became apparent that projects of the complexity of those undertaken in the Defence sphere cannot hope to be successful without early engagement of industry players with Defence during the stages of a project when the needs of capability are being defined. This would mean that there is an early exposure of Defences capability concepts to industry which would allow industry to engage with Defence planners and provide novel and addition capability ideas to them. This early engagement of industry would result in a two-fold benefit. Industry would gain by being able to better plan its ongoing investment and resource placement whilst Defence, and the Australian Government, would gain by progressively becoming a 'smarter customer.' One of

the main points the delegation took away from nearly all of its meetings was the need for all countries to become smarter customers when dealing with industry. This requires Defence to have the personnel in place to provide the knowledge needed to be a 'smart customer'. The point here being that research and development is done to a significant extent in industry. Government, however, needs to retain its expertise, so that it can continue to be a smart customer or become a smart customer. This is the case particularly in Australia where primes have such depth of reach back to parent companies.

Given the scarcity of highly skilled technical staff, especially systems engineers, and the enormous length of time needed to train them, it is important that centres of excellence be established so that a consolidated core of such personnel should be available to Defence. Without the properly trained, experienced personnel in place Defence will never become the 'smart customer' that the Australian Government requires it to be. This means Defence and DMO need to take complementary action to become smarter customers. It is imperative that such skills not be duplicated and that the best scientific and engineering minds are available on a long term basis.

The delegation heard of the importance of 'smart customers' engaging in early and ongoing test and evaluation before second pass approval. Whilst a testing regime such as this can be expensive the possible savings in addressing design flaws early on compared to trying to modify projects once a capability becomes operationally necessary cannot be underestimated.

The delegation also heard that, whilst a MOTS or COTS solution may reduce procurement risk, they can introduce capability risk. If a proper design and capability evaluation is not rigorously carried out in the earliest stages of a procurement process. Risk may in fact increase where a MOTS or COTS solution morphs into a new developmental procurement project with associated cost and schedule overruns. This is something that a 'smart customer' would not let occur.

It became clear to the delegation that the US, is moving towards a new commercial approach to foreign military sales. Much of the present control system is based on the Arms Export Control Act (AECA), which dates from the 1970s when technology was only ever shared between a limited number of western allies, military technology and innovation was leading the commercial sector; and, technology transfers were physical and transactional in nature. The AECA does not have a 'dual use' focus, and tends to treat all items as entire military products, which is no longer the case. This results in over-control of individual components. For example, the brake shoes for a tank are subject to the same level of controls as

the tank itself. The statutory authority afforded by the Commerce Control List is much more flexible, with more focus on dual use, than the legislative restrictions of the State Department's Munitions List. The delegation and, Australian Defence and Industry, looks forward to these US reforms taking shape.

The GAO made the strong point to the delegation that, in the ship building domain, commercial enterprises do not accept contracts utilising equipment that is not technologically mature. This was contrasted with the US Department of Defense who frequently pursue acquisitions involving capabilities that are unproven. This is often a contributor to schedule and cost blowouts. To this the GAO used the example of engineering drawings being completed to at least 90% in the ship building domain. GAO noted that in the commercial shipbuilding world, work would not commence until all the design elements were completed. Defence work is often commenced with less than the 90% stipulated by GAO. The importance of this knowledge point in avoiding schedule delay and cost blowout was stressed by the GAO.

The delegation also heard about the importance of Intellectual Property (IP) in the Defence procurement process. More than ever weapons systems are the product of the software that it takes to run them and if a country is not at least aware of the IP issues associated with the software used in a particular capability it runs the risk of being caught in a spiralling cost scenario from which it would be hard to extricate itself.

The similarities between the problems encountered by the Spanish in their NH90 program and Australia in the MRH90 program are noted, namely:

- windscreen damage
- floor strength
- egress problems caused by location of door gun

The delegation looked at submarine capabilities in the United Kingdom, Spain and Germany and, whilst each country had its own way of approaching the issue of a submarine capability, it was apparent to the delegation that there is a clear linkage between design and construction, and maintenance and sustainment in the context of building an industry over 50 years. If a country such as Australia decides that it wishes to have a submarine capability it will be a big investment in money and

time. From the outset those charged with the design and construction of a submarine must have at the forefront of their minds the maintenance and sustainment of that submarine. These issues cannot be separated. The cost of doing so, as Australia has seen with the Collins Class submarines, is unacceptable.

Any person familiar with Australia's Collins Class Submarines is also familiar with the conflict and compromise involved in their purchase. Despite the public focus on the various physical issues with the boats, the major problem with the submarines was with some critical design elements of the submarine, an overly ambitious combat system, and integration issues. In addition, questions about security problems and intellectual property concerns raised by the US in relation to having a European combat system linked to American weapons, became an obstacle and led to eventual cancellation of a tender process regarding the combat system and resulted in the decision to enter a joint development program with the United States, with a formal agreement signed on 10 September 2001 at the Pentagon. It became clear to the delegation that, a detailed, early and open discussion of IP issues, particularly in relation to combat systems, is important if Australia is to learn the lessons of Colllins.

To the end of building an Australian submarine industry whilst having a submarine capability I note the German company HDW's advice to the delegation that, if looking for a Type 214/216 class of submarine, it would be wise to build the first submarine of type in Kiel. Australia could send representatives to Kiel for indoctrination into the boat technical details and the support philosophy during an initial build process. This type of phased in construction is one way to Australia being able to build on its capacity to be more fully involved in the design, build and maintenance of its submarine capability.

Senator Mark Bishop

Delegation Leader

Membership of the delegation

Leader	Senator Mark Bishop
Deputy Leader	Senator the Hon David Johnston
Members	Senator David Fawcett
	Senator Mark Furner
	Dr Dennis Jensen MP
	Senator the Hon Ursula Stephens
Delegation Secretary	Mr Robert Little

List of abbreviations

ADAC	AUSMIN Defence Acquisition Committee
ADF	Australian Defence Force
AIP	Air Independent Propulsion
AOR	Replenishment Oiler *or* Auxiliary, Oiler, Replenishment
AT&L	Acquisition Technology and Logistics
AUSMIN	Australia-United States Ministerial
AWD	Air Warfare Destroyers
DCNS	DCNS S.A. (formerly the Direction Technique des Constructions Navales and the Direction des Constructions Navales) is a naval defence company based in France and is one of Europe's leading shipbuilders.
DMO	Defence Materiel Organisation
DoD	Department of Defense (US)
EMD	Engineering Manufacturing and Development
FMS	Foreign Military Sales
GAO	US Government Accounting Office
HDW	Howaldtswerke-Deutsche Werft

IOC	Initial Operating Capability
IP	Intellectual Property
ITARS	International Traffic in Arms Regulations
JLTV	Joint Light Tactical Vehicle
JSF	Joint Strike Fighter
LCH	Landing Craft, Heavy
LHD	Landing Helicopter Deck
LRIP	Low Rate Initial Production
MoD	Ministry of Defence (UK)
MOU	Memorandum of Understanding
MOTS	Military-Off-The-Shelf
MRAP	Mine Resistant Ambush Protected
NASAMS	National Advanced Surface to Air Missile System
OPV	Offshore Patrol Vessel
OT&E	Operational Test and Evaluation
RAAF	Royal Australian Air Force
RFI	Request for Information
TD	Technical Data
TKMS	ThyssenKrupp Marine Systems
TLS	Through Life Support
TRL	Technology Readiness Level
US	United States

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Introduction

Background

1.1 From 14 April to 3 May 2012, a delegation from the Parliament of Australia visited the United Kingdom, Spain, Germany and the United States of America.

1.2 The delegation consisted of members of two Parliamentary Committees as follows:

- The Defence Sub-Committee of the Joint Standing Committee on Foreign Affairs Defence and Trade as part of its *Review of the Defence Annual Report 2010-2011*.
- The Foreign Affairs, Defence and Trade References Committee of the Senate Standing Committee on Foreign Affairs, Defence and Trade as part of its inquiry into *Procurement procedures for Defence capital projects* referred by the Senate on 9 February 2011.

1.3 The delegation proposal was submitted to the Prime Minister by the Presiding Officers as an additional Parliamentary Delegation for 2012 on 13 October 2011. The Prime Minister approved this on 13 January 2012.

1.4 This report summarises the activities and observations of the delegation.

Aims and objectives of the delegation

1.5 The key aim of the delegation was to visit countries that design, build and maintain/sustain submarine fleets, deal with large scale Defence

procurement issues, and to visit the project office of the Joint Strike Fighter (JSF) and Lockheed Martin.

1.6 The delegation found that first-hand inspections and briefings by suppliers and US government officials greatly assisted them to better understand the dynamics of supply chains and their implications for Australia's ongoing Defence capability. Additionally, in the context of the current debate on future capability, members of the delegation benefited greatly from gaining an appreciation of the US procurement experience as it continues its own Defence program in the face of increasing budgetary restrictions and continuing volatility in international security.

Acknowledgements

1.7 The delegation greatly appreciated the efforts of those people who contributed to the planning and smooth operation and overall success of the delegation trip.

1.8 The delegation thanks the staff of the International and Community Relations Office (ICRO), in particular, the Visit Coordinators, Ms Fiona Way and Mr Raymond Knight, for their support with the many administrative arrangements involved with the delegation.

1.9 The delegation is also grateful to the many organisations and individuals who were generous with their hospitality, insights and knowledge. While there were many people involved the delegation makes particular note of the contributions from the following:

United Kingdom

- Mr Archie Bethel, CEO, Babcock Marine and Technology Division
- Mr Ken Grove, Director Strategic Development, Babcock Pty Ltd, Australia
- Rear Admiral Steve Lloyd, Ministry of Defence, Chief Strategic Systems Executive
- Mr Andy Maltby, Operations Director – Submarines
- Captain Paul Methven, Ministry of Defence, Superintendent Submarines
- Commander Henry Nord-Thomson, RAN, Assistant Naval Advisor, Australian High Commission

- Mr Nick Paxman, Counsellor Defence Materiel, Defence Materiel Organisation, Australian High Commission

Spain

- Mr Manuel Filgueira Ameneiros – Navantia Managing Director - Cartagena Shipyard
- Mr. Francisco Barón Bastarreche - Navantia Commercial Director
- Vice Admiral José A. Ruesta Botella - Deputy Chief of Navy
- Rear Admiral Manuel Garat Caramé - Commander Naval Action Group 1)
- Chief Petty Officer James Dew RAN, Defence Attaché Assistant Southern Europe, Australian Embassy Madrid
- Admiral General D. Manuel Rebollo García - Chief of Navy
- Rear Admiral Antonio Sánchez Godínez - Deputy Director of Engineering Services
- Captain, Paul K. Mandziy, CSC, Defence Attaché Southern Europe, Australian Embassy Madrid
- Ms Zórica McCarthy, Australian Ambassador to Spain
- Major-General Juan Manuel Garcia Montaño - Deputy Director General de Armamento y Material
- Mr Luis Guerra Peña - Vice President, Airbus Military Head of A330 MRTT RAAF Program)
- Colonel Juan Nardiz Prado - Director of Foreign Support Unit)
- Mr Antonio Rodríguez-Barberán - Airbus Military, Senior Vice President (Commercial)
- Mr Luis Cacho Quesada - CEO Navantia[1]
- Colonel D. Valeriano Díaz Vega - Director NH90 Program
- Vice Admiral Francisco José Cortés Uria - Ferrol Base Commander
- Mr. Esteban Garcia Vilasánchez – Navantia Managing Director - Ferrol Shipyard

1 Mr Quesada is no longer CEO of Navantia.

Germany

- Mr Hans Christoph Atzpodien, Chief Executive Officer (CEO) and Chairman of the Board for ThyssenKrupp Marine Systems (TKMS)
- Mr Andreas Burmester, Chairman of the Board of Management, Howaldtswerke-Deutsche Werft (HDW) GmbH
- Mr Jim Duncan, TKMS representative in Australia
- Jan-Olof Johansson, TKMS Area Representative for Asia Pacific, and
- Mr Manfred Klein, Senior Vice-President of HDW,
- Group Captain Warrick Paddon, Defence Adviser, Berlin.

United States of America

- Mr Christopher C Ames, Director, Business Development, General Atomics Aeronautical Systems.
- HE Mr Kim Beazley, Ambassador to the United States of America
- Mr Santi Bulnes, Vice President – F-35 Vehicle Systems, Lockheed Martin Aeronautics Company
- Mr Tom Burbage, Executive Vice President, Aeronautics, Lockheed Martin Aeronautics Company
- Mr Orlando Caravalho, Executive Vice President and General Manager, F-35 Program, Lockheed Martin Aeronautics Company
- Congressman Joe Courtney (Democrat, Connecticut)
- Mr Chris De Cure, Consul General – Los Angeles
- Mr Frank Dougherty, Vice President – F-35 Production, Lockheed Martin Aeronautics Company
- Mr T Bradley Duffin, Director, Facilities, Raytheon Company Integrated Defense Systems
- Mr Steve Enewold, Vice President, Broad Area Maritime Surveillance Unmanned Systems, Northrop Grumann
- Mr Daniel Fankhauser, Counsellor Defence Materiel, Australian Embassy Washington

- Group Captain Ian Farnsworth, Australian National Deputy, Joint Strike Fighter Program Office
- Mr Graeme Fay, Deputy Consul-General, Los Angeles
- Mr Paul Francis – Managing Director Acquisition and Sourcing Management, Government Accountability Office
- Mr Bill Grant, Supportable Low Observables, Lockheed Martin Aeronautics Company
- Dr J Michael Gilmore – Director of Operational Test & Evaluation
- Mr Vince Harrell, Embassy Driver, Australian Embassy Washington
- Mr David L Hartman, Director Business Development, Integrated Air and Missile Defence, Raytheon Company Integrated Defense Systems
- Hon Mr Frank Kendall - Acting Under Secretary of Defense for Acquisition, Technology & Logistics
- Mr Keith Knotts, F-35 Business Development – Australia, Lockheed Martin Aeronautics Company
- Mr Bob Kovac – Managing Director, Directorate of Defense Trade Controls, Department of State
- Mr Walt Kreitler, Director, Business Development, BAMS UAS, Northrop Grumann
- Mr Brett B Lambert - Deputy Assistant Secretary of Defense, Manufacturing and Industrial Base Policy
- Vice Admiral William E Landay III, Director, Defense Security Cooperation Agency
- Mr Christian Leimkuhler, Senior Manager, Integrated Air and Missile Defence, Raytheon Company Integrated Defense Systems
- Mr Isaac Levido, Congressional Liaison Officer, Australian Embassy Washington
- Mr Gary Liberson, Strategic Studies Group - ADP Operations Analysis, Lockheed Martin Aeronautics Company
- Mr Brett Little, Procurement Officer, Defence Materiel Organisation, Australian Embassy Washington
- Mr Denny Littrell, F-35 Virtual Simulation Tech Lead, Lockheed Martin Aeronautics Company

- Mr James Madar, Senior Analyst Acquisition and Sourcing Management, Government Accountability Office
- Mr Mike McCormack, Manager, Production Operations (Tour Guide) BAMS UAS, Northrop Grumann
- Mr J D McFarlan, Vice President – F-35 Flight Test, Lockheed Martin Aeronautics Company
- Major General Tim McOwan, Head Australian Defence Staff (Washington) and Defence Attaché
- Ms Diana Moldafsky – Assistant Director Acquisition and Sourcing Management, Government Accountability Office
- Mr Nigel Morris, Minister Counsellor, Defence Materiel, Australian Embassy Washington
- Mr Jeff Morris, Vice President – F-35 Prime Mission Systems: Software, Lockheed Martin Aeronautics Company
- Ms Andrea Nicandri, Manager, Visits and Protocol, Australian Embassy Washington
- Mr Alan Norman, F-35 Chief Test Pilot, ,Lockheed Martin Aeronautics Company
- Air Vice Marshal Kym Osley, Program Manager, New Air Combat Capability
- Ms Dana Pierce, F-35 Program Manager – Australia, Lockheed Martin Aeronautics Company
- Mr John Porter, Deputy Director, International Strategic Development, General Atomics Aeronautical Systems.
- Mr J J Quinn, Vice President, Business Development Unmanned Systems, Northrop Grumann
- Mr Hank Reed, Director, Business Development, F-35 Program, Northrop Grumann
- Mr Judson Rose – Director Policy, Defense Technology Security Administration, Department of Defense
- Mr Sam Rose, Vice President of Integrated Supply Chain, Raytheon Company Integrated Defense Systems
- Mr John Schueler, Supportable Low Observables, Lockheed Martin Aeronautics Company

- Mr Brett Schupan, Counsellor, Defence Strategic Policy, Australian Embassy Washington
- Air Marshal (Retd) Geoff D Shepherd, Aviation Development Australia Limited
- Dr Mike Skaff, Chief Engineer, Pilot Vehicle Interface, Lockheed Martin Aeronautics Company
- Congressman Adam Smith (Democrat, Washington)
- Mr Jim Stratford, Manager, Communications, Aerospace Systems, Northrop Grumann
- Major-General John F Thompson, USAF, Deputy Program Executive Officer, Joint Strike Fighter Program
- Mr Alfred G Volkman**,** Director, International Cooperation Office of the Under Secretary of Defense for Acquisition, Technology and Logistics
- Ms Christine Walby, Representative, Business Development BAMS UAS, Northrop Grumann
- Mr Keith Webster, Deputy Assistant Secretary of the Army for Defense Exports and Cooperation
- Mr Jack Weaver, Manager, F-35 Production Operations,
- Mr Kevin Wolf, Assistant Secretary of Commerce for Export Administration, Department of Commerce

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Europe

United Kingdom

Plymouth

2.1 The delegation visited the Babcock/Royal Naval Dockyard Devonport

2.2 Babcock explained to the delegation that their role was very much as a service provider, not a traditional Original Equipment Manufacturer (OEM). This meant that Babcock had long term contracts with a very small number of customers. It was a successful model, noting that Babcock was now the major supplier to the UK Ministry of Defence (MoD).

2.3 Babcock explained their role in surface ships construction and support, and provided background to the consolidation process that had been taking place in UK dockyards. This is part of a UK Government policy to create an indigenous support capability.

2.4 The Babcock presentation explained the split between BAE Systems and Babcock in construction and support, with BAE Systems being the builder of submarines and Babcock the support contractor. It was noted this distinction is less clear cut for surface ships, with Babcock involved in some construction work and BAE Systems involved in some support work.

2.5 The delegation was interested in how this 'single source' approach, worked for the UK. Rear Admiral Lloyd stated that the UK has no other option – there is no alternative capability available and the UKMOD knows it has to deal with this situation. Babcock and BAE Systems are seen an integral parts of the 'strategic enterprise' of shipbuilding and

support. This is in part driven by the overheads of establishing and maintaining the required technical expertise.

2.6 Babcock explained to the delegation that, given the life-cycle from start of first boat to the disposal of the last, submarines required a fifty year program plan.

2.7 Babcock are involved in at all stages of a fifty year planned submarine program, including:

- Design
  - ⇒ concept, appraisal and detailed design of Successor
  - ⇒ continuous-at-sea deterrence
  - ⇒ weapons handling systems upgrades
- Fleet time engineering
  - ⇒ clear program of support for current fleet
  - ⇒ supporting HMS Astute into service
  - ⇒ commissioning and training
- Deep maintenance and infrastructure support
  - ⇒ Devonport identified as Centre of Excellence
  - ⇒ HMS Vigilant concluding (LOP(R))
  - ⇒ planning and preparation underway for HMS Vengeance

2.8 The UK enterprise system has some key themes:

- Commitment to an enduring submarine enterprise – program stability
- Clarity of Ministry of Defence, Defence Equipment and Support , Fleet and Industry roles
- Recognition of difference between design/build and sustainment environments
- Re-shaping Ministry of Defence and industrial enterprise to deliver:
- Cost out, sustainability in, performance improvement.
- Focus on delivering In-Service submarine availability.

2.9 Babcock detailed the enterprise approach to support contracts. A commitment to making savings in support for each contract is required. Contracts are based on meeting availability targets, and there was a profit/loss share approach, with a base cost plus fee, with the objective to

drive sustainability up and the fee down. There is recognition of the need to be within a 'band of profitability'.

2.10 MoD staff explained the UK approach of very close cooperation between the MoD and Babcock in some detail. Engineering support and information and knowledge management were identified as being critical to that cooperation and collaboration.

2.11 Captain Methven stated that there was a very cooperative approach with Babcock at all stages – there were no issues on that score. Safety was always the priority, with availability the next priority – target is 4 of 6 Trafalgar (T) class boats operational with 1 of 4 Vanguard (V) class on station at all times. The MoD was the safety duty holder, with responsibility for the budget and the delivery of submarine availability to Navy command under the joint business agreement.

2.12 The delegation was interested in the UK's view of the critical elements. Were systems engineering or systems integration more important? Did the specifications need to be right at the outset? Rear Admiral Lloyd advised the MoD used to be very prescriptive, but was less so now. There was an acknowledgement that the investment had now been made in industry now, and the most important thing was for the MoD to be an 'intelligent customer'.

Inspection

2.13 Site visits included HMS Torbay in refit (inside and outside), and an external view of HMS Vengeance which was high and dry in dry dock prior to its Long Overhaul Period (Refuel). The delegation also toured the nuclear fuelling/defueling facilities. These are significant pieces of infrastructure.

Spain

Ferrol

2.14 Navantia's shipyard manager, Esteban García Vilasánchez began with a presentation of the Navantia ship construction board, the models of various recent types of ship that had been built by the company, and the model of the shipyard and it surrounds. The delegation noted the close relationship between the company and the Spanish Navy. Mr Francisco (Paco) Barón Bastarreche, Vice President for Commercial and Industrial

Cooperation for Navantia also provided a presentation on the structure and capabilities of the company, including a video presentation. Presentations were also provided on the Landing Helicopter Deck (LHD) and Air Warfare Destroyer (AWD) programs.

Inspections

2.15 The delegation toured the AWD module construction, saw the LHD-02 progress on the slipway, and had an extensive tour onboard LHD-01, where outfitting work is continuing. The delegation was very impressed with the LHD capability, particularly its size, habitability, and obvious capability.

2.16 The delegation also inspected the Spanish Navy *Álvaro de Bazán* class Frigate SPS *Méndez Núñez* (F104) and attended a slide presentation on the capabilities of the ship. The delegation asked about who did the integration of the Aegis systems for F 100 – the answer was this was done by Navantia.

2.17 The delegation also had a tour of the Replenishment Oiler (AOR) ship, BAC *Cantabria*.

Madrid

Visit to Spanish Ministry of Defence

2.18 General Juan Garcia Montano gave an introduction. He covered the Spanish economic situation, the defence materiel cooperation Memorandum of Understanding (MOU) with Australia and the bilateral discussions that had taken place in Sydney during Pacific 2012.

2.19 Discussions centred on the NH-90 helicopters and covered many common issues that Australia and Spain are experiencing in service, including engines, windscreens and floors. Spain said it was keen to learn from Australia about 'hot and high' environment issues given Australia's testing is more advanced.

2.20 Colonel Diaz Vega – the Spanish NH-90 lead - outlined the Spanish 'National Industrial Plan' which led to the establishment of the Aeronautic and Logistics Platform in Albacete. The forward fuselage section was constructed at Albacete which was seen as an important capability for the future. Cost was estimated as being an additional Euro 100 million.

2.21 Obsolescence issues in the helicopter were discussed. The Spanish explained their preference to undertake common configuration changes to

the aircraft. However they explained that there was a possibility that they may not be able to afford to do this, with the possibility that obsolescence would prove to be more expensive in the longer term. They advised Australia to be careful. This was a discussion about doing a block upgrade at a specified time as opposed to continuous spiral upgrades. They noted the up-front cost associated with paying for IP to enable this.

2.22 Colonel Diaz mentioned some of the design defect issues with the helicopter, including the windscreen cracking. This was seen as an issue for the company to fix, at no cost to Spain.

2.23 The delegation sought information about the future of aircraft construction in terms of composite versus aluminium components. The Spanish representatives agreed that the future was composites, but this has presented some challenges for Spain.

2.24 The delegation requested an update on the helicopter floor issue, noting that the helicopter was supposed to have been designed for more troops and kit, so it was unclear why the design had failed so badly. The Spanish agreed, noting that a forum on the helicopter had identified that the floor was not strong enough. Consequently, Spain is expecting a nil cost fix for this by the manufacturer.

2.25 The delegation took some particularly salient points from the discussion with the Spanish Ministry of Defence;

- Investigation and analysis of a capability needs to be done as early as possible. This will have an impact of the capability's cost, schedule and planning.
- It must be decided who are best placed to do this investigation and analysis; is it DSTO, people from the test environment or specifically contracted industry to do it on the Commonwealth's behalf.

Visit to Navantia Head Office

2.26 Navantia management emphasised the company's commitment to Australia in terms of current programs, and its increasing presence in Australia particularly noting the state of the Spanish economy and the expectation of continuing low demand from the Spanish Navy.

2.27 Navantia is looking at a long list of opportunities, including submarines, AOR, Landing Craft, Heavy (LCH), Offshore Patrol Vessel (OPV), Future Surface Combatant. Navantia Australia will have 30 people on staff by next year and intend to be involved in through-life support activities and provide engineering consultancy services.

2.28 The delegation asked Navantia for their opinion about the schedule issues in Australia, noting that, while the Defence Materiel Organisation (DMO) had mostly dealt with cost issues, schedule continues to be a problem. The delegation suggested that perhaps this was partly to do with Australianising Military of the Shelf (MOTS) designs, whereas it seemed that Navantia was able to deliver on schedule.

2.29 Navantia stated diplomatically that this was difficult to answer as there are always many unknowns. A fixed price contract is an incentive for Navantia. Navantia stated that they were set up for flexibility, and for cooperation with others, including the US. Cooperation with BAE Systems on AWD was a first time experience for Navantia, so some problems had arisen – partly these were due to strong cultures, which were hard to match up. Once established, the relationships need to be continued.

2.30 The delegation was greatly interested in strategies for Australia to ensure realistic initial timeframes and avoid initial over-optimism. Navantia commented that, generally, internal knowledge is good within each company, but it is the people integration that is the most important thing to get right.

2.31 The delegation asked directly for Navantia's opinion on the progress of the AWD. Navantia stated there are different contract structures and dealing with an Alliance is different and more difficult than dealing with Spain and Norway. Language problems also contributed to the issues. Problems had now been overcome in Navantia's view but more challenges are ahead as the combat system is brought into the ship and integration is addressed. Navantia advised Australia should not underestimate those challenges.

2.32 Navantia stated that there was a small but strong team in Australia and Navantia attended all program meetings and was participating strongly. Navantia has the right people and is integrating those people with Lockheed Martin, Raytheon andASC[1]. Navantia also noted that ASC's quality is very good.

2.33 The delegation noted that the Cantabria vessel viewed the day before was very impressive, and asked what would be the schedule for production of such a ship if it were 95% common with the Spanish vessel, with only appropriate modifications for commonality of systems with the AWD and LHD: Navantia later advised a 42 month production schedule, based on minimal Australianisation.

1 Previously Australian Submarine Corporation, now known as ASC.

2.34 Navantia informed the delegation that they thought that DMO was comprehensive and knowledgeable, although sometimes too much documentation was required and it was perhaps too process-oriented. Navantia had some difficulties understanding the emphasis on MOTS, but, generally, DMO is held in high regard.

Visit to Airbus Military at Getafe

2.35 Airbus Military began by conveying their high opinion of the Australian approach to procurement and of DMO in particular. They also had a high opinion of the RAAF.

2.36 The Multi Role Tanker Transport (MRTT) boom problems were discussed at some length. The delegation noted that this was another example of a 'MOTS solution' actually requiring more development than anticipated. Airbus Military and the Resident Project Team (RPT) leader agreed that this was the case, as a 'fly by wire' boom was required. It was noted this should have been flagged as a risk earlier in the process.

2.37 It was explained to the delegation that the cost of the fix was about $10m plus additional RPT costs etc and this would be shared between Airbus Military and Australia The first version of the new software had been received and was being evaluated.

2.38 The delegation was interested in knowing how such risk can be identified earlier. The RPT response was that better ability to dissect the proposals to assess the degree of maturity is required whether it is MOTS or developmental issues.

2.39 Airbus Military noted that 'complexity on top of uncertainty always makes an issue'.

2.40 The delegation were updated on testing of the boom using F-16s, and asked why there had been problems with the MRTT when the US was refuelling F-16s all the time seemingly without such problems. Airbus Military noted that booms are often lost, often due to human error, which can't be entirely removed from the process. Airbus Military was doing its best to reduce such losses..

Inspections

2.41 The delegation was given a tour of the facilities including a tour of a MRTT aircraft at close quarters. The delegation was also shown around a ten-year old C-295 aircraft on the site tour.

Reception at residence of Ambassador HE Zorica McCarthy

2.42 On the evening of 19 April the delegation attended a reception at the residence of Australia's Ambassador to Spain, Her Excellency Zorica McCarthy.

2.43 Spanish guests included the Chief of Navy and Chief of Air Force, indicating to the delegation that Spain sees Australia as an important partner in defence materiel issues.

2.44 The delegation thanks Ambassador McCarthy for her hospitality.

Cartagena

2.45 The visit to Cartagena was hosted by the Cartagena Shipyard Director, Manuel Filgueira Ameneiros, and Paco Barón. Also present amongst the Navantia representatives was the Director for Submarine Design, Remigio Diez Lorenzo. Admiral Jaime Muñoz Delgado, Head of Naval Logistic Command & Senior Submariner Officer was also present.

2.46 Navantia began by explaining some of the company's submarine building history, including showing the delegation the shipyard's vessel honour board and model room.

2.47 Staff numbers at Navantia Cartagena were stated as being around 1,166. This business is not dissimilar to ASC – a fact which was noted by the delegation.

2.48 Presentations given to the delegation outlined the recent history of Scorpene submarine builds, including the sharing of the work with DCNS[2] for the Chile and Malaysia boats, with Navantia building the aft sections and DCNS the forward sections. This then led into the presentation on the current S-80 program.

2.49 The delegation questioned the Air Independent Propulsion (AIP) system and its ethanol source. Navantia explained that a wine production by-product was being used, and that cereals could also be used. It was explained that there was a suitable plant near Cartagena and the product from this plant was higher quality than using wine by-products.

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2 DCNS S.A. (formerly the Direction Technique des Constructions Navales and the Direction des Constructions Navales) is a naval defence company based in France and is one of Europe's leading shipbuilders.

2.50 Navantia gave a presentation on all aspects of the S-80. It was noted that BAE Systems had been involved in manufacturing the first sonar domes, but later domes are being manufactured by Navantia since it has acquired the necessary huge hydraulic press to form the curved 'petals' of the dome.

2.51 The combat system is being supplied by Lockheed-Martin after a competitive process. Navantia described the combat system as attempting to achieve 'Virginia Class performance in a small platform'.

2.52 There was discussion of the perceived major risks in the program. Navantia listed these as systems integration of onboard systems, the performance of new developmental systems, testing, and overall cost.

2.53 Navantia summarised some of their previous contributions to SEA1000[3] including the 2009 Request For Information (RFI) exercise and the RFI for batteries. They also explained some of their intentions with regard to the current RFI process, and the approaches they would take to meeting the MOTS/Evolved MOTS and Design to Requirements elements. The intention was to meet as many of Australia's requirements as possible, but some trade-offs would be proposed. This included an option for either a 'one diameter' or 'three diameter' hull. Navantia said that they were serious about the process as 'Australia' is very important to Navantia'. Navantia emphasised their experience in international collaboration.

2.54 The delegation sought information on intellectual property control and separation during development, and Navantia agreed that control of intellectual property information was very important.

Inspection

2.55 The delegation toured the submarine facilities including the S-80 build (including the new hydraulic press), submarine simulator, virtual design facilities and Air Independent Propulsion development and testing facilities.

2.56 During a final wash-up session after the tour, the delegation discussed Spain's strategic basis for having a submarine capability. The Spanish Admiral stated that Spain saw submarines as an important part of a

3 As part of the 2009 Defence White Paper preparations, significant work was undertaken to identify and quantify the maritime capability developments that would be required to meet Government's expectations. This process resulted in SEA 1000.

balanced force, and that Spain had quite a wide area of interest in the Atlantic and the Mediterranean.

2.57 The delegation questioned what IP arrangements would apply under any new S-80 contract. Navantia confirmed that it would all be Spanish IP – there was a documented agreement with France (in English) to cover this.

2.58 The delegation also queried if there were any Foreign Military Sales (FMS) or International Traffic in Arms Regulations (ITARS) issues with the S-80. The Spanish Navy responded that there were no issues with the Combat System, other than the usual licences, as it was a commercial purchase, not FMS.

Germany

Kiel

2.59 The delegation visit to Kiel was hosted by Hans Christoph Atzpodien, CEO and Chairman of the Board for ThyssenKrupp Marine Systems (TKMS), and Andreas Burmester, Chairman of the Board for Howaldtswerke-Deutsche Werft (HDW), and supported by a range of senior HDW managers, including Manfred Klein, Senior Vice-President of HDW, Jan-Olof Johansson.

2.60 HDW stated that the workforce breakdown at Kiel was about 56% white collar, 37% blue collar, and 7% apprentices. It was noted that HDW employed a 'craft' system for apprentices, in common with Australia and the UK.

2.61 HDW provided extensive coverage of the various submarine products including Type 212/214, and the planned Type 216 which was being put forward by HDW as a possible option for SEA1000 in the long term.

2.62 HDW listed its various customers, and outlined the 'material packages' approach to enabling construction to take place in customer countries.

2.63 It was noted that there were about 600 design engineers and that submarine design was a constant process, either for new boats or modifications to existing designs.

2.64 Analysis of the time taken from commencement of design through to delivery of boats for the various submarine types was provided to the

delegation. This varied from 17 years in the case of Type 214 to 11 years for the Dolphin. For the Military Off The Shelf (MOTS) solution based on Type 214 it would be about 6-7 years if there was 5-10% adaptation of the design, or up to about 9 years if there was a feasibility phase.

2.65 The discussion about the content of the MOTS offers made (or about to be made) to Australia included displacement, complement, propulsion systems, fuel cells and cruise speed.

2.66 The delegation were provided with a comparison of the 2009 Request For Information (RFI) offer made to Australia (the Large Oceangoing Submarine, or LOGS) and the proposed 2012 MOTS offer based on the Type 214. There was also some comparison of the LOGS and the proposed Type 216.

2.67 The delegation questioned whether the Type 216 would have hull-penetrating masts. HDW stated that would be the case as this tended to still be a customer requirement. HDW saw this as a tradition that would take another 10 years to overcome.

2.68 The potential for 'bridging' between Type 214 and Type 216 was discussed. Specifically this discussion centred on potential areas of commonality such as diesels, combat system and towed arrays.

2.69 The delegation sought HDW's view on a possible 214 MOTS and then Type 216 'new generation' approach to Australia's submarine capability requirements. HDW's view was that it does not make sense to have too many different classes of boat. The delegation questioned possible timeframes if a straight to Type 216 decision was made: HDW advised that it would be 10-11 years until the first boat completion, with additional deliveries every 9 months after that.

2.70 The delegation queried the maintenance and man-hour considerations for a major docking. HDW stated that to a Full-Cycle Docking for a Type 212 equivalent was about 10 months and about Euro10 million.

2.71 The issues around the resource requirements for building versus maintaining submarines were discussed. HDW's view was that shipbuilding resources needed to be balanced against the establishment of ongoing support.

2.72 The infrastructure required for Type 216 (which is a 4,000 tonne displacement boat) and whether there was any thought of infrastructure being established in Australia was discussed. HDW suggested that there was a wider issue of market demand, and that it was perhaps a later area for consideration. Their stated view was that it was wise to build the first

submarine of type in Kiel. It was noted that the client can send representatives to Kiel for indoctrination into the boat technical details and the support philosophy during an initial build process.

Inspections

2.73 The delegation was taken on a tour of the dockyard, including a Type 212 submarine in maintenance, the submarine production facilities and the AIP development and testing facility.

2.74 In a wrap-up session after the tour, HDW were asked for their view of what they saw as their 'strategic advantage'. HDW named the following points:

- that the company is privately owned, and this removes some of the other pressures suffered by DCNS and Navantia.
- the company has a solid base in technology and has flexibility to deal with customer requirements and reduce risk, on a case by case basis.

2.75 HDW considered that this was a big opportunity for TKMS/HDW to work with Australia.

3

United States of America

3.1 The delegation commenced their time in Washington with a briefing by Major General Tim McOwan, Head Australian Defence Staff.

3.2 The delegation attended the ANZAC Day Dawn Service at Korean Veterans War Memorial and then the ANZAC Day Gunfire Breakfast at the New Zealand Embassy.

3.3 The delegation then resumed its meeting program.

Meeting with the Hon Mr Frank Kendall - Acting Under Secretary of Defense for Acquisition, Technology & Logistics

3.4 Mr Kendall informed the delegation that his key challenge is to equip United States (US) forces within the defence budget available. As this budget reduces, the challenge is becoming harder; accordingly, the pursuit of cost effectiveness in acquiring capability is paramount.

3.5 Budget constraints have forced the US to review its acquisition program. This is being done from a strategic perspective, with a focus on reaching a specific strategically based position, rather than making ad hoc cuts that could be detrimental to the strategic position of the US.

3.6 This strategic position reflects where the US requires its force structure and disposition to be in 2020. It includes a renewed focus on the Pacific and Asia, increased maritime and air power, and the capacity to conduct two operations simultaneously.

3.7 Planning and reviews take a 'strategy first, budget second' approach. However, the full force structure desired by the US is not affordable, and so there will be cuts. However, any cuts will consider strategic implications.

3.8 The 'strategy first budget second' approach to planning will likely take four to five years. During this time, it is important that Defence leaders keep faith with US defence personnel, and, while personnel costs would eventually reduce, in the short term Defence leaders recognise the importance of meeting obligations to a Defence force that has been engaged in Iraq and Afghanistan for many years.

3.9 To address the constrained equipment budgets the US face in coming years, a number of management strategies have been implemented in the Acquisition Technology and Logistics (AT&L) environment, specifically:

- new programs will be cost capped;
- unaffordable programs will not be started;
- requirements 'creep', and attendant cost overruns, will be contained;
- through life support costs (including facilities, spares, IT and services) will be reviewed and managed more effectively.

3.10 In addressing the challenges faced by Australia and the United Kingdom (UK), Mr Kendall noted:

- Australia's choice of Foreign Military Sales (FMS) or 'off the shelf' acquisitions provide greater predictability in individual programs, whereas the US faces greater uncertainty due to the number of developmental programs it has embarked on.
- The personnel challenges faced by the US are different to the organisational challenges faced by the UK, which is presently considering a much bigger cultural shift of the Defence Equipment and Support (DE&S) towards outsourcing and contractor operated activity.

3.11 The delegation were advised that, in the US, industry is engaged early in the capability acquisition process, largely through mechanisms such as the conduct of concept studies and the development of prototypes. The US has a preference for maintaining competition during the early stages of a program, and has found that such a strategy does not add significantly to initial program costs.

3.12 As in Australia, the management of Intellectual Property (IP) is a challenge, but the US makes IP a key selection issue when equipment solutions are being determined.

3.13 Mr Kendall told the delegation that there is concern that people in Department of Defense (DoD) are being trained to manage the bureaucracy, not to manage contracts, programs and industry.

3.14 The US does have a preference for competing Through Life Support (TLS), although the US experience is that the Original Equipment Manufacturer (OEM) is often awarded the TLS contract. Acquisition, Technology & Logistics (AT&L) has embarked on some performance based logistics contracts, and, in constrained budget circumstances, reliability and availability through life are critical issues in managing the cost of operating equipment fleets.

3.15 Performance based contracts can provide good incentives for companies providing TLS to reduce costs and improve profits, but the US does have examples where performance based contracts have been managed poorly.

3.16 Concurrency, that is where a capability is being built and designed at the same time as for example in the JSF program is an issue. In the case of the JSF production commenced too early, resulting in the need for too many rounds of Low Rate Initial Production (LRIP). The Mine Resistant Ambush Protected (MRAP) family of vehicles is regarded as a better example of 'how to go fast' on a program. In this case the components in the vehicle were not new, and the overall vehicle concept was simple. On the other hand, the JSF was far more complex and the pursuit of a stable design, and the development of prototypes, should have been prioritised.

3.17 In closing the meeting, Mr Kendall advised:

- That the US remains strongly appreciative of Australia's efforts in Afghanistan, and thanks the delegation for Australia's on-going support.
- The JSF program is stabilising, although another 1-2 years of testing will be necessary.
- Strongly encouraged Australia's continuing participation in the JSF program, noting unit costs will be dependent on production numbers.
- Cyber, space and missile defence are areas where further bilateral opportunities for collaboration will arise.

Meeting with Vice Admiral William E Landay III – Director, Defense Security Cooperation Agency

3.18 Vice Admiral Landay provided the delegation with a general background briefing on the role of the Defense Security Cooperation Agency (DSCA) and the Foreign Military Sales (FMS) program administered by the DSCA.

3.19 In the course of the presentation, Vice Admiral Landay:

- emphasised that the FMS program is seen by the US Government as a key method of promoting interoperability and cooperation between the US and partner nations
- outlined the significant growth in the FMS program in recent years, especially in the areas of through Life Support (TLS) and service provision; and,
- highlighted the volume of activity undertaken by Australia, noting that Australia was ranked third in overall FMS sales in the last Financial Year.

3.20 After his presentation, members of the delegation discussed a number of issues. Topics covered included:

- The DSCA has a very positive view of the bilateral Defence Trade Cooperation Treaty, and recognises that present International Traffic in Arms Regulations (ITAR) provisions can be 'cumbersome'. The US sees the introduction of the Treaty as an opportunity for promoting technology exchange, and the DSCA thinks that the US will be responsive to such activity.
- Without the benefit, to date, of seeing the Treaty in operation, it is accepted by the DSCA that the detailed provisions of the Treaty may prove onerous or unwieldy, but the intent is certainly to provide greater freedom for the exchange of Defence items and information with Australia, and DSCA will be working to that goal.
- FMS cases do not prohibit the exchange of personnel; however, there may be some case-by-case restrictions, specifically for sensitive technology. In Australia's case, it is unlikely there will be many such cases. It should be understood that these restrictions accrue through ITAR regulations, rather than FMS arrangements.

3.21 The delegation noted that Australia has significantly increased its reliance on FMS acquisitions in recent years. Australia has identified specific capability requirements, many of which are leading edge or high end technology. The delegation were interested to know if the US feels under pressure from close allies to access highly protected technology, and if there is activity under way in the US to review such releases.

3.22 The delegation was informed that there is a general feeling in US Government that too many items are being controlled, and there are steps underway to move as many items as practicable from the Munitions List to the Commercial List —thereby reducing the control regime necessary for these items. The Secretary of Defense has a view that fewer items

should be controlled, but control of genuinely important technologies should be strengthened. In terms of release, it is a country-by-country issue, and in many cases, release requests are considered at the highest levels of Government. Rigorous screening of applications for sensitive technologies will continue, and there will always be some items that the US is reluctant to release.

3.23 In addition, release requests are often complicated by the integrated nature of platforms and equipments, and by the need to protect both US national security interests, and industry interests.

3.24 The delegation also discussed Australia's new submarine program, noting the current Government advice that any new submarines for Australia will rely on conventional, rather than nuclear power. However, as per the present COLLINS class boats, integration of high technology and sensitive US systems into the new submarines is likely. Consequently the delegation was interested to know how the US would deal with requests to release sensitive technology into non-US designed and built submarines.

3.25 The US advised that, generally it may be necessary for high tech systems to be fitted post construction, in an environment in which the US is satisfied enables the technology to be satisfactorily protected. In such a case, Australia would have to accept the conditions that apply to release of sensitive technology, and also the cost associated with fitting systems post hull construction. Establishing an FMS case to allow early engagement with the US in the design and construction phases of any project would be advantageous, and there are examples of the US and Australia working together in the early stages of major projects. A key driver around the timing of technology release will, of course, be the location where the submarines are built.

ANZAC Day Reception

3.26 The delegation attended the ANZAC Day Reception held at the Australian Embassy. The reception gave the delegation an opportunity to mix with staff of the embassy on an informal basis and to view an impressive exhibition of photographs of Australian Defence Force (ADF) personnel in Afghanistan.

Export Control Reform Roundtable

3.27 The Export Control Roundtable consisted of the delegation and the following participants from the United States:

- Mr Kevin Wolf – Assistant Secretary of Commerce for Export Administration, Department of Commerce;
- Mr Bob Kovac – Managing Director, Directorate of Defense Trade Controls, Department of State; and,
- Mr Judson Rose – Director Policy, Defense Technology Security Administration, Department of Defense.

3.28 The roundtable provided an opportunity for the Delegation to talk in detail with key US contacts about wide-ranging Export Control Reform issues, including the Defence Trade Controls Treaty.

3.29 Mr Wolf and Mr Kovac provided comprehensive introductions to the topic, addressed the following points:

- The current Export control reform initiatives stem from a 2010 announcement by Secretary for Defense Gates that cited the need for improved interoperability and US national security, and a requirement to focus control efforts on significant items/issues.
- Responsibility for progressing reform rests with a number of US Government agencies — hence representation from State, Defense and Commerce at the Export Control Reform Roundtable, resulting in the system being inherently inefficient, with multiple agencies and overlapping jurisdictions.
- Much of the present control system is based on the arms export Control Act (AECA), which dates from the 1970s and is 'outdated'. In the 1970's:
  - ⇒ technology was only ever shared between a limited number of western allies,
  - ⇒ military technology and innovation was leading the commercial sector; and,
  - ⇒ technology transfers were physical and transactional in nature.
- The AECA does not have a 'dual use' focus, and tends to treat all items as entire military products, which is no longer the case. Projects such as the JSF require a new paradigm for control.
- There are too many items on the US Munitions List, which results in over-control of individual components. For example, given that the brake shoes for a tank are subject to the same level of controls as the tank itself.

- The statutory authority afforded by the Commerce Control List is much more flexible, with more focus on dual use, than the legislative restrictions of the State Department's Munitions List .
- Presently there are 17 different enforcement agencies with authority over exports with many having different definitions on what constitutes an export or who can act as an authorised person.
- Much of the reform effort is focussed towards the establishment of the 'Four singles' – a single control list, a single IT system to operate across government, a single enforcement agency, and a single licensing agency.
- Reform will not happen overnight, and the passage of reform through Congress, has been difficult. Pending legislative change, activity has been focussed on harmonising definitions and control list amendments, reviewing the items proposed for transfer to the Commerce List, and securing industry comment and agreement to proposed changes.
- One key change being considered is a Licence Exception for 36 countries, including NATO countries plus Australia, New Zealand, Japan and South Korea, that would allow any item on the commercial List that is identified for government end-use to be exported licence-free. This would promote interoperability, joint operations, and more effective supply chains.

3.30 The delegation questioned when Australia can expect the proposed changes to the US ITAR system to be introduced and stabilised?

3.31 It was explained that the aim is to effect the majority of Export control reform initiatives by the end of calendar year 2012, but if a new Administration is elected in November, this may be jeopardised. Reviews of some categories of items on the Munitions and Commercial Lists will be completed in 2012, but others will not occur until 2013.

3.32 The delegation were interested in how source code/software will be treated under the reforms.

3.33 It was explained that the control of software and source code is in the scope of the reviews. Their treatment will continue to depend on the equipments to which they relate, so some items of software and source code will remain on the Munitions List.

3.34 The delegation expressed concerns over international collaboration between tertiary institutes, in particular, where foreign students are involved, and sought the panel's view about these issues.

3.35 The panel members stated that the issues of research and development and tertiary collaboration have been considered as part of the reform initiative. Congress continues to be concerned about how controlled information (or items) is protected. Under proposed reforms, approval would still be required to transfer any controlled information beyond the 36 country community, and some issues around dual nationality and country of birth, particularly of students/researchers remains.

3.36 The delegation observed that some Australian companies have indicated that the export of Defence related equipment will be more complicated under the treaty, and will choose to continue operating under ITAR provisions.

3.37 The panel members explained that the US is aware some companies have indicated they will opt to continue operating under ITARs, rather than using treaty mechanisms. The panel noted the complexity of the treaty mechanism is contributing to this view.

3.38 The delegation also asked if small companies would be pressed into the treaty community, or if they would be able to undertake related work without meeting Treaty requirements?

3.39 The panel explained that there is no blanket answer regarding small business. Each case will be assessed independently according to the nature of the activity.

3.40 In summary the delegation found that the Export Control reform activity is a transparent process within the US government and within US industry. While the Treaty will have benefits the change of a majority of Defence and dual use items from the Munitions List to the Commercial List through the reform package will provide more effective outcomes.

Meeting with Mr Keith Webster - Deputy Assistant Secretary of the Army for Defense Exports and Cooperation

3.41 It was stated that, for the procurement of Army equipment from the US, Australia is able to specify requirements. In such a case, where Australia outlines its particular requirements, for example, in the Letter of Request in the FMS process, the US would then quote the marginal cost above the standard procurement price.

3.42 The delegation discussed the potential for Australia to maintain critical technical skills by posting people into US acquisition and sustainment programs. The US advised that, in general terms, the concept is supported but each case would need to be considered on its merits.

3.43 The issue of Intellectual Property (IP) was discussed. The US advised that IP is unaffordable to buy, but obtaining sufficient rights to allow equipment to be supported through life is important. However, any technical data transfer with Australia would be based on individual agreements between the US and Australia. Further, the US would be careful to ensure its industrial base is protected, and that competition against US companies is not inadvertently created as a consequence of the technical data transfer.

3.44 It was, however, discussed that Australia, Canada and the UK are considered to be at the top of a 'pyramid of trust' with regard to the use of protection of sensitive IP and Technical Data (TD).

3.45 The delegation raised the issue of lack of interoperability of communications equipment in theatre.

3.46 Mr Webster agreed that there have been communication issues, including those between elements of US forces themselves. He advised that, when such issues are elevated within the Army acquisition hierarchy, they have, in recent times, been resolved 'reasonably quickly'.

3.47 It was noted that Australia tends to have a slower pace of spiral upgrades than the US. The delegation sought comment on whether there was a view about the optimal pace of upgrades.

3.48 It was discussed that the pace of change is often dictated by 'soldiers' demands. This is true not only for technology, but also for items of personal equipment such as boots, sunglasses and clothing. However, the Army, and the US DoD more generally, are facing a significant contraction, and care will be needed to optimise the US inventory, while maintaining flexible platforms that can address a range of capability requirements.

3.49 It was further discussed that concerns have been raised that some programs over reach capability requirements, and, in order to reduce acquisition costs, these requirements will have to be managed carefully. In highly technological platforms, and in the case of technical inserts and upgrades, detailed needs analysis will be required.

3.50 It was also noted that, in the case of some equipment, such as communications, it is difficult to keep up with the pace of change. Such an example is the iPhone, where there is insufficient time to develop specific military requirements, such as toughening for combat or extension of battery life before further change emerges.

3.51 In light of future funding restrictions, the delegation were interested in the signals that would indicate 'hollowing' the US Defense Force, and whether any areas are exempt from cuts.

3.52 Mr Webster explained that the critical element will be to maintain personnel capability. There will be reductions, but these will take time and will be managed carefully. Removing the potential burden of sequestration[1] will allow for more effective planning, but given that personnel reductions can only occur at a specific pace, reductions in the US equipment inventory are inevitable

3.53 It was noted that a reliance on 'off-the-shelf' acquisitions poses a risk that intelligent customer capability will erode.

3.54 The US explained that one significant lesson it has learnt in the last decade is that there has been too much outsourcing, and key skills, such as system integration and program management have eroded. The Gansler report *"Special Commission on Army Acquisition and Program Management in Expeditionary Operations", November 2007* identified these issues, and there is recognition that such skills must be rebuilt in the Department of Defense. It was also noted that some hollowing has occurred as an outcome of the surge to get US personnel into combat roles, but rebuilding of the skills is necessary, and the cost to do so will come at the expense of some acquisition activities.

3.55 The pursuit of efficiencies (cost reductions) by Government has a common theme between the US and Australia, and it was noted that the task of reform is complex and time consuming, and in some cases will involve generational change.

3.56 It was also discussed that there is significant pressure in the US to resolve the budget challenge the Government faces. Under this pressure, there is a risk of 'salami slicing' the Defense budget, and there is already evidence this is occurring. Such actions have significant consequences, and strategic rigour, including an understanding of what the 'pivot to Asia' means, must be applied to identify the necessary budget reductions. Additionally, there are specific regulations regarding the management of personnel, so reductions will, in the short-term, potentially have to be made in acquisition programs. If sequestration occurs, there will be a need to re-negotiate existing acquisition and support contracts to effect necessary savings.

1 Sequestration is the term used in the United States to refer to Defence budget cuts.

3.57 The delegation were interested in knowing if, in the US, the through life support (TLS) of fleets were competed, or whether industry is encouraged to undertake long term investment through the establishment of long term partnering arrangements The delegation also questioned which contracting models are perceived to generate the best value for money in TLS activity.

3.58 The US explained that there are a range of complications in the area of TLS. Each of the Services maintains a number of Service Depots, which are available to provide some TLS. Original Equipment Manufacturers also play a role. Competing TLS contracts is required by law, but in reality, there is often only one response to TLS tender requests, and new vendors are not always available in particular industry sectors.

3.59 In terms of contracting structure it was discussed that the pendulum swings between cost plus, fixed price and performance based, but the biggest challenge is ensuring there are effective and experienced personnel to manage the contracts. In particular, the US DoD struggles to negotiate appropriate contracts, often taking significant time, and resulting in sub-optimal arrangements.

3.60 Information was sought on the status of the Joint Light Tactical Vehicle (JLTV) program. The delegation was interested to discuss the number of vehicles and variants the US expects to acquire under the program.

3.61 The US advised that Australia had initially responded to an invitation by the US to participate in the JLTV program, and that participation in the Technical Development phase but Australia was seen by the US as valuable. The US would have welcomed Australia's continued participation in the Engineering Manufacturing and Development (EMD) phase, but the program has run into schedule difficulties, and the US is aware of domestic pressures in Australia to develop and manufacture an indigenous vehicle. It was noted US Army participation in an international collaborative program had been highly informative.

3.62 There was agreement at the recent AUSMIN Defence Acquisition Committee (ADAC) that Australia and the US would continue to work together in the area of protected vehicles, under an existing Memorandum Of Understanding (MOU).

3.63 Subject to ongoing budget challenges, the US proposes to acquire around 55,000 vehicles under the JLTV program. A more detailed program structure will be developed after EMD phase is complete.

3.64 The delegation questioned the US's experience of fielding double 'V' hulls on the Stryker vehicle. The US advised that, while there were concerns in

the program over power to weight issues, the vehicles have been fielded recently, with more modifications to be completed. It was noted that the US has not sustained any casualties inside Stryker vehicles since the double hulls were deployed.

Meeting with the Government Accountability Office (GAO)

3.65 The following representatives from the Government Acccountability Office met with the delegation:

- Mr Paul Francis, Managing Director Acquisition and Sourcing Management
- Ms Diana Moldafsky, Assistant Director Acquisition and Sourcing Management; and,
- Mr James Madar, Senior Analyst Acquisition and Sourcing Management

3.66 Ms Diana Moldafsky commenced the briefing with a description of the GAO's Acquisition and Sourcing Management Team. She advised:

- The Acquisitions Area conducts in-depth analysis of the US Government's largest and most complex acquisitions, including DoD weapons systems, NASA and DoD Space Systems and Homeland Security systems. GAO's goal is to provide Congress with early warning on technical and management challenges.
- The Sourcing area identifies ways in which acquisitions can be structured and managed to deliver maximum return on investment and strengthen accountability and integrity within the procurement arena. They also look at ways in which the supplier base can be strengthened.
- The GAO has evolved over the last ten years to become an organisation capable of providing early advice and early warnings on programmatic issues. The aim is identify risks to inform decision making rather than providing "after action reports."
- GAO personnel are not embedded in project teams but they are engaged very early in the project process. GAO staff continue to monitor programs on an ongoing basis and report annually on major programs, a process termed a "Quick look."

3.67 GAO briefly summarised the types of work conducted as follows:

- system or Portfolio drill Downs to evaluate how specific systems/programs are performing including:

- ⇒ requirements underpinning the acquisition;
- ⇒ technical and program management risks;
- ⇒ status of technologies in research and development;
- ⇒ cost, schedule and performance issues; and
- ⇒ performance of system in test events.

- Annual Major Weapon Systems Assessment:
  - ⇒ broad coverage of 60 plus DoD weapon acquisition programs, including assessment of product development risk based on best practices.
  - ⇒ summary of systems covering status, funding, cost and schedule baseline and assessment of technology design and production knowledge against best practices.
- Cost Cutting Reviews
  - ⇒ development of best practices through assessment of leading commercial entities and government entities.
  - ⇒ best practices underpin a 'knowledge based approach' that can be applied to acquisition programs to identify deficiencies, risk and/or areas for improvement.

3.68 GAO personnel described some of the common issues and deficiencies associated with Defense procurement. In some instances these are similar to those faced by the Australian Department of Defence. The issues include:

- 12-15 year development cycles with turnover of key personnel, potentially many times, before the capability is delivered;
- delayed delivery of capability which may be fielded late or already technically obsolete;
- requirements creep;
- cost growth;
- funding instability; and
- issues with industry capacity to deliver.

3.69 The GAO discussed that its philosophy towards project managers has shifted. The GAO now assumes that project managers are good people trying to achieve good outcomes but acknowledges that they may be compromised in the decision making process as a result of, for example, budget constraints and approval processes. These can, ultimately, lead to

poor project success, or alternatively, good people are not put in the position to succeed.

3.70 The GAO then described the knowledge based approach in further detail as follows:

- Knowledge Point 1: At the start of Development, Milestone B or contract award for ships, needs and resources are aligned. At this point, the GAO is looking at the technological maturity of the system and sub elements. The GAO uses the "technology readiness level (TRL)" as a key indicator. This is essentially a scale from 1 to 7 with 1 being the least mature and 7 being the most mature. A TRL of 7 would normally be a fielded capability. The GAO made the point that in the ship building domain, commercial enterprises do not accept contracts utilising equipment that is not technologically mature, whereas the Defense domain frequently pursues acquisitions involving capabilities that are unproven. This is often a contributor to schedule and cost blowouts.
- Knowledge Point 2: When the decision to start building prototypes, or start of ship construction), the design must be able meet user needs and must demonstrated stability. The GAO used the example of engineering drawings being completed to at least 90% in the ship building domain. GAO noted that in the commercial shipbuilding world, work would not commence until all the design elements were completed. Defense work is often commenced with less than the 90% stipulated by GAO. The importance of this knowledge point in avoiding schedule delay and cost blowout was stressed by the GAO.
- Knowledge point 3: At the decision to commence Low Rate Initial Production (LRIP), that the product can be produced within cost, schedule and quality targets must be demonstrated. For example the JSF has significant concurrent activity being undertaken in conjunction with LRIPs.

3.71 The GAO made the point that most DoD programs continue to proceed without the requisite level of knowledge. This puts them at higher risk of delay and cost increase. In the GAO's analysis of major programs, they identified an increase of 11% in estimated procurement costs ($121 billion). Approximately half of this amount is related to requests for additional quantities.

3.72 The GAO explained that, within the DoD, there is a series of independent review processes that ensures a program is being considered objectively. For example CAPE – Cost Analysis and Program Evaluation is one such

process. The GAO also noted that, even under self assessment, the numbers are often concerning, and this is a valuable lead indicator that the program has problems.

3.73 The GAO explained that the allowable growth rate in LRIP means that LRIP numbers can be exceeded by up to 10%. In addition, the DoD can seek a waiver to increase LRIP numbers without penalty. The GAO members were not aware of any program with as many LRIPs as the JSF, which currently has ten planned LRIPs.

3.74 It was noted that the GAO's approach to auditing Defense acquisition programs demonstrates a proactive effort to inform decision making, rather than reporting on failures after the event.

3.75 The delegation asked the GAO about the appropriate time to engage with industry and whether early engagement might reduce program risks. The GAO responded that early engagement was problematic prior to decision milestones. Too much involvement with industry in advance of decisions can actually interfere with the competitive process. There is a compromise between being able to inform decisions early and letting a competitive process run its course.

3.76 The GAO noted that successful program were often characterised by a willingness to make capability tradeoffs to achieve cost and schedule. They specifically cited the P-8A Poseidon capability where there was a time imperative to complete the program, and, decisions were made to keep the program on track.

Meeting with Mr Brett B Lambert - Deputy Assistant Secretary of Defense, Manufacturing and Industrial Base Policy

3.77 Mr Lambert gave a broad assessment of the current US Defence industrial landscape, with a US focus. He raised the following key points:

- The US and Australia currently face a number of similar issues, such as constrained Defence spending;
- Global commercial and financial complexity is increasing;
- In Defence industry, there is an increasing interdependence between countries, and individual companies;
- The US assesses there is ongoing risk to the viability of second and third tier suppliers. Prime contractors (Primes) rely on this network of support, and, while at present some interaction between primes and

sub-contractors is not visible to Government, greater transparency of the supplier base would be advantageous.

- Foreign sales (exports) are a key multiplier for many defence Primes, and this contributes to the 'globalisation' of the defence industrial base. The US and Australia must leverage off this reality;
- Internally, the US DoD is frustrated over its lack of knowledge about the US industrial base. Making industry/supply chains part of business is a key challenge;
- The US is aware of Australia's Priority Industry Capability (PIC) program, and is attempting a similar initiative with its current S2T2 (Sector by Sector, Tier by Tier) review of US Defense industry. In particular, it is seeking to develop an increased understanding of lower tier companies and their particular niche capabilities. Mr Lambert highlighted that Australia had gone a step further than the US by making the PIC analysis public;
- Further bilateral collaboration in the area of Defense industry, as agreed at the recent ADAC, will be of benefit to both the US and Australia.

3.78 The delegation noted that one of the challenges for Australia in regard to PICs and Strategic Industry Capabilities (SICs) is to sustain and use them, instead of opting for off-the-shelf or FMS solutions.

3.79 Mr Lambert agreed that this is a difficult challenge that requires a delicate balance, particularly in an environment of constrained Defence spending.

3.80 There is a tendency for Defense in the US to revert to procuring known capabilities, even if these are not needed. The challenge is to preserve key skills in appropriate numbers while ensuring that programs meet capability requirements and are not just subsidising industry.

3.81 He discussed that investing in defence for 'jobs' is terribly inefficient given high wages, low production scales and inconsistent demand compared to other industry sectors.

3.82 However, in cases where there is a likely requirement for the skills in the future, but current activities are not sufficient to sustain these skills, consideration should be given to deploying the skilled individuals to alternate tasks/programs to maintain the key capabilities.

3.83 The delegation was interested in the implications of recent industry consolidation for both Government and prime companies.

3.84 The US noted that, although US Defense budgets have contracted, in real terms there is still significant spending and this money flows to primes, and then through to small-to-medium enterprises (SMEs).

3.85 Further, most of the big defence prime companies are principally now systems integrators rather than traditional end-to-end suppliers.

3.86 It was discussed that further significant consolidation of prime companies is not expected, but the US does expect to see more vertical and international integration.

3.87 Additionally, more activity between the US and Asia is expected. US companies are focussing more on overseas markets, with expectations that exports will comprise up to 25 percent of sales for US defense companies in the near to mid term. Much of this is expected to occur as direct commercial sales, with Government to Government activity being perceived by industry as being less successful. Previously, top companies only focussed around 10% of their business on international markets.

3.88 The delegation noted that there could be severe implications of where specific industries are rationalised, for example, the US is essentially down to two prime contractors in terms of aircraft.

3.89 Mr Lambert responded that it is inevitable that factories will have to close, and there will have to be a change in the definition of 'competition'. In the future competition may be 'non-peer competition', that is Navy capability versus an Army capability, rather than companies competing against each other in a specific program. Ultimately, 'dissimilar competition' might be result in a program being terminated, because it will not deliver value.

3.90 He further discussed that, in the future, there will be a focus on preserving capability, not facilities. The C-17 facility at Long Beach is a good example of this issue. Although it is a 'treasure', it has gone from employing 600,000 people and producing two aircraft an hour to ten aircraft per year. Consequently this is resulting in significant losses.

3.91 As a result the US is funding a design and research capability for the Next Generation Bomber program that will focus on preserving a production capability.

3.92 He concluded that the US is likely to invest in manufacturing, but with a very specific focus on what Defense needs from its industry base.

3.93 The delegation questioned whether there is cost point at which the US considers termination should occur. For example, if the cost of the JSF program continues to increase is there a specific cost threshold at which the US will withdraw from the program.

3.94 It was discussed that, although the US terminated programs worth around $300 billion, in total cost of ownership terms, in 2010, historically, this is not an area where US has a good track record. Rather the US tends to be over optimistic about the affordability, and success, of individual programs.

3.95 Consequently, establishing appropriate metrics like 'should cost' and 'will cost' and applying them to individual programs will be an important part of future affordability judgements. Where targets are not being met, projects will then be candidates for termination.

3.96 In the specific case of JSF, it was acknowledged that there is significant concurrency in the program, and that production commenced precipitately. While the overall numbers for the project still indicate concerns, trend data has suggested an improvement, and there is increasing optimism amongst suppliers that costs are now been contained, and that the program has stabilised.

Meeting with Dr J Michael Gilmore – Director of Operational Test & Evaluation

3.97 The Operational Test and Evaluation (OT&E) organisation is responsible for operational testing, so the organisation seeks early engagement with programs. However, in a budget constrained environment, there is pressure for the range and amount of testing to be reduced.

3.98 At present, there is a civilian staff of around 85, plus a further 23/24 military officers. There are a further 120 people in the Analysis Institute, to which OT&E has access. The military staff brings operational experience, and the civilian staff comprise a range of backgrounds, with many PhD-qualified and engineering staff.

3.99 In the last FY, the cost of the civilian staff, and the IDA was $190 million, funded from Defense sources.

3.100 There is a significant internal training program, and OT&E staff work closely with program personnel in each of the Services to establish appropriate testing programs, specifically to ensure program evaluations have the appropriate data on which to rely.

3.101 It is mandated that OT&E is responsive to the Secretary of Defence, and to Congress.

3.102 Congress mandates that OT&E undertake testing to examine interoperability and information assurance. Dr Gilmore explained that Congress is frequently disappointed on findings about interoperability.

3.103 It was discussed that projects cannot proceed to full rate production without OT&E testing being completed, and the decision to proceed agreed. However many projects object to this mandated role.

3.104 Although programs rely on the data that accrues from test regimes, there is a tendency amongst the Services to mistrust testing and criticise it for schedule delays and cost challenges. In reality, it is not the testing that delays programs rather it is addressing problems or issues that are identified by the testing itself. If a problem is identified, it has to be remediated.

3.105 With regard to evaluation activities, OT&E does not have a formal role, but can advise on the veracity of technical matters, especially in cases where existing test data is available. However, generally, developmental and operational testing activity during the US evaluation process of tenders is limited.

3.106 At present, project offices fund OT&E activity, however, there are arguments (largely from projects) that this should not be the case. OT&E comprises around 1 percent (+/- 0.5 percent) of project costs. In some cases, like JSF, this is a big dollar amount, and in some years, depending on the phasing of projects, there can be a big in-year spend against OT&E elements. With regards to developmental testing, it is hard to break out the specific cost because of the nature of the activity, but it is estimated to be a significant figure.

3.107 Program Managers are often unhappy with OT&E costs given that they typically occur toward the end of their project's schedule.

3.108 Responsibility for testing is dependent on the contract arrangements for each project. Often it is a combination of government and contractor tests, such as those being conducted for the Joint Strike Fighter program.

3.109 However, live fire tests and fully instrumented tests can generally only be done in government operated facilities.

Comments on the JSF

3.110 The delegation asked Dr Gilmore to discuss a recent report on the JSF program, which contained a number of criticisms. In particular, Dr Gilmore was asked to address weight issues, and whether the removal of safety equipment to reduce weight is considered appropriate.

3.111 Dr Gilmore characterised the report as not critical but, factual. He noted it describes the current state of the program. He agreed weight margins for the F-35B are tight, compared to historical precedence. Additionally,

OT&E considers there are some associated structural issues, although a significant amount of structural testing remains to be completed. There are some further issues around vertical tails and buffeting, and with the tail hook.

3.112 However, with regards to the F-35A variant, OT&E is not aware of any weight-related threats to the program, but noted some durability and buffet testing remains to be completed.

3.113 He noted mission system testing is in its very early stages and there remains significant work to do in both development and testing. It is expected that Block 3 testing will be more challenging than the current activity.

3.114 There are 77% of planned test points still to be completed and new test points are yet to be included in the overall test plan. This means the overall test program is still growing.

3.115 Weapons integration testing to date has indicated there are some optimistic judgements about progress in that area, and there has been no weapons integration flight testing to date.

3.116 Overall, OT&E considers that missions systems remain the biggest challenge for the program.

3.117 OT&E advised that removal of equipment such as fire extinguishers or stop valves, could be seen as unwise, but further reviews of such proposals are being undertaken.

Meeting with Congressman Adam Smith (Democrat,Washington), Ranking Member House Armed Services Committee

3.118 Congressman Smith was asked for his views on the current state of the Defence acquisition industry in the US and noting the stressed budget situation in the US, in particularly the looming sequestration cuts that will fall heavily on defence, he was also asked for his views on how the situation may be resolved.

3.119 Congressman Smith noted that the US Defence industry had experienced a particularly negative 10 years, with a number of high profile projects running significantly over budget, over time and in some cases being cancelled altogether. Congressman Smith said that he thought it was important that planners become more realistic about the capabilities they desired in the future.

3.120 On the issue of sequestration, Congressman Smith said that, while he could give a long and complicated explanation why it would not actually happen, he did note that it would take some eight months until the issue was resolved. In his opinion this will not occur until at least January or February 2013, and a solution was unlikely to be reached until the last minute. Representative Smith noted that the Defence budget consumes a significant portion of the budget as a whole and is, therefore, appropriate to be 'in the mix' when considering necessary spending cuts. Representative Smith said the Defence budget had already borne significant cuts, and would likely be able to absorb further reductions.

3.121 Representative Smith was asked how he viewed Congress's role as both a financial lever and an oversight body on Defence spending. Representative Smith said he thought Congress had in important role to play and that elected members ultimately had to take responsibility for the spending decisions of the Government. In respect of Defence acquisition projects, Representative Smith said Congress had historically assisted by intervening in troubled projects and setting them right. In particular Representative Smith noted that Congress played a key role in keeping the C-17 transport aircraft project alive in the 1990s. This aircraft is now an indispensible element of US airlift capability.

Meeting with Congressman Joe Courtney (Democrat, Connecticut)

Comments on the US Defense Budget

3.122 Representative Courtney explained that the the Defense Authorisation process for Congress to pass the FY2012 Defense Budget had commenced.

3.123 He commented that budget cuts and the prospect of sequestration provide a troubling basis for the budget consideration. However, there is some optimism, particularly amongst the House Armed Services Committee members that sequestration can be avoided. Nevertheless, the prospective end of the first Obama Administration does present some issues in terms of timing.

3.124 He noted that Defense has already been hit hard by Budget cuts, although the required reductions are considered achievable with careful management.

3.125 Representative Courtney notes that, even with the proposed drawdown, US Defense Force manning levels will remain above those of 2001. However, it will be necessary to monitor the respective Officer corps, where key skills, such as engineering and logistics, are being lost.

3.126 He stated that it is clear there are too many Defense Bases in the US, particularly a greater number of airfields than are required but there is stiff resistance to Base closing initiatives.

3.127 He discussed that the US, and particularly the House Armed Services Committee, is mindful of the increased emphasis on Australia that results from recent US force posture decisions.

Comments on the JSF

3.128 The delegation explained to Representative Courtney that meetings with the GAO and OT&E had identified a number of issues related to the JSF in which Australia and the US held similar concerns.

3.129 Representative Courtney agreed there were concerns with the program, and lamented that F-22 production had ceased early. He noted frustration with Lockheed Martin's performance on the JSF program, especially with regard to cost management.

Comments on submarines

3.130 Representative Courtney indicated he had met previously with Ambassador Beazley to discuss Australia's Future Submarine Program, and asked the delegation for an update on the program.

3.131 The delegation discussed that the requirement for new submarines had been established in the 2009 Defence White Paper. Some research into Australia's industrial capacity to undertake the program had been completed, and some serious shortfalls had been identified. There is ongoing consideration of an off-the-shelf solution, including European options that appear to offer the benefit of lower Through Life Costs. It is still not certain whether an Australian Government will commit to a solution that relies on a new submarine design, particularly given current budgetary pressures.

3.132 It was discussed that the program for new submarines is extremely complex, and interaction with the US on the program is complicated by the decision to rule out nuclear propulsion. Additionally, cooperation with the US will require the resolution of a significant number of ITAR issues, given the nature of potential technology transfer. Regardless of the challenges of the Future Submarine Program, it is clear that the current COLLINS boats are not performing to requirements.

3.133 With regards to the Virginia class submarines which are built in the Congressman's home state by Electric Boat, he discussed that the program

continues to deliver new boats effectively with production running on time, and slightly under cost.

Comments on Afghanistan

3.134 Representative Courtney questioned whether Australia's drawdown from Afghanistan would remain as currently forecast, or whether there is a possibility of some acceleration.

3.135 The delegation told Rep. Courtney that the Australian Government remained committed to a 2014 withdrawal. It was noted this position enjoyed bipartisan support in Australia.

Dinner with HE Kim Beazley

3.136 On the evening of 26 April, His Excellency Kim Beazley, Australia's Ambassador to the United States, hosted the delegation at a dinner at his residence.

3.137 The dinner was greatly appreciated by the delegation and the delegation members extend their thanks to HE Beazley and his wife Susie for their hospitality.

Meeting with Major-General John F Thompson, USAF, Deputy Program Executive Officer, Joint Strike Fighter Program

3.138 The delegation held a classified meeting with members of the Joint Strike Fighter Program Office. The majority of the meeting time was taken up with a Weapon System Program and Operational Capabilities Brief held at the SECRET level.

3.139 The central discussions at classified level were greatly appreciated.

Boston

Briefings at Raytheon Company, Integrated Defense Systems

3.140 The delegation was hosted by Mr Sam Rose, Vice President of Integrated Supply Chain.

3.141 The delegation received briefings on Raytheon's Integrated Air and Missile Defense.

Integrated Air and Missile Defense

3.142 Integrated Air & Missile Defense is Raytheon Integrated Defense Systems' business area that develops and integrates proven air and missile defense systems. The delegation received a specific briefings on:

- National Advanced Surface to Air Missile System (NASAMS)[2];
- Patriot.

National Advanced Surface to Air Missile System

3.143 NASAMS is a collaboration between the Norwegian company Kongsberg Defence and Aerospace and Raytheon.

3.144 Raytheon explained to the delegation that NASAMS is used for high-value asset protection, national events and force protection. NASAMS is deployed in the National Capital Region (NCR) of Washington DC.

Patriot

3.145 The Patriot is a long-range, high-altitude, all-weather weapon system. With over 200 fire units fielded worldwide, Raytheon regard the Patriot as combat-proven and the world's most advanced air and missile defence system. It used by 12 nations, including the US and five North Atlantic Treaty Organisation (NATO) nations.

3.146 Raytheon Integrated Defense Systems is the prime contractor for Patriot and the systems integrator for the PAC-3 missile.

Inspection

3.147 The delegation toured the Circuit Card Assembly, metal fabrication and Patriot Radar Assembly areas.

Fort Worth

Briefings at Lockheed Martin

3.148 Discussions at SECRET level were held with Lockheed Martin at Fort Worth.

2 Sometimes referred to as the Norwegian Advanced Surface to Air Missile System.

3.149 The discussions dealt with all aspects of the JSF Program. The breadth and depth of the information given, and the frankness in which the delegations questions were answered was very much appreciated by delegation members.

Inspection

3.150 The delegation toured the JSF flight line and met the JSF Chief Test Pilot, Mr Alan Norman.

San Diego

Briefings at General Atomics Aeronautical Systems

3.151 General Atomics grew 20 per cent last year and now employs 5,700 people. While most business remains with the US Government, the company is looking to expand and market their products to close allies such as Australia.

3.152 The company has been engaged with Australia over many years and has previous conducted maritime surveillance trials with their Mariner Demonstrator UAV off the northwest shelf of Australia in 2006. The Predator family of UAVs, particularly the Predator B (also known as the MQ-9 Reaper), have proven to be reliable, combat proven workhorses and adaptable in conducting both maritime and overland missions.

3.153 The next generation of aircraft design, the Predator C Avenger, is still in development and testing. This design will be jet powered, include a maritime variant, and incorporate stealth design features, including internal weapons bays. The design is still 2-3 years away from being an attractive option for countries like Australia, as it is still expensive and requires further development.

3.154 The Avenger design offers increased speed, maximum takeoff weight and reductions in radar cross section. Further development continues on the Predator B / MQ-9 Reaper design, including redesign of the landing gear that will increase its maximum takeoff weight from 10,500lbs to 11,700lbs.

3.155 The airframe itself is not the real product, rather, it is the situational awareness that it is able to provide to those on the ground. An advanced 'cockpit' control station is also under development and is expected to be

fielded within the next two years. This will be entirely touch-screen, and provide an expanded field of view.

3.156 The risk of losing the expertise and knowledge gained from operating leased UAV systems on operations in Afghanistan and the importance of maintaining the niche capability knowledge and experience was highlighted to the delegation.

3.157 On the topic of lease or buy comparisons, it was detailed to the delegation that the lease of a system would cost around $40 million per annum, based on rate of effort of 500 flying hours per month in Afghanistan. In any lease arrangement the labour costs would be the biggest variable, as the aircraft itself only has operating costs of around $300 per hour. For normal peacetime missions, the operating costs could be anywhere from $500-1000 per hour depending on the mission profile. In austere and dangerous conditions such as Afghanistan, the labour component is more costly given the need to pay operators more.

3.158 The delegation questioned the susceptibility of the data link to jamming. It was discussed that the aircraft are almost always operated by satellite link, with the ground control stations located in the United States. As such the link is a very narrow beam and, therefore, generally safe from jamming. While there is a risk of jamming the satellite directly, it is likely this would be treated as an act of war and the jamming source would be targeted and disabled.

3.159 Additionally, the system still operates an analogue data link and the Block 4 stage of development will introduce a digital data link. The company is also researching a secure digital line of sight data link as a redundancy plan.

3.160 The delegation sought information on the commonality between the Hellfire missile carried on the armed variants of the Predator aircraft with those missiles in, or coming into, the Australian inventory. The company responded that, whilst it would depend on the type of missiles Australia holds, one of the major benefits of the Predator system over other UAVs such as Heron is that it has the capacity to be armed, should Australia make that decision at a future point in time.

Inspection

3.161 The delegation toured the Predator production facility, with particular emphasis on the end-to-end manufacturing of the aircraft, the Ground Control Stations and their sub-components.

Palmdale

Briefings at Northrop Grumman

3.162 The delegation was briefed that the Northrop Grumman Corporation has undergone significant restructure in the past few years under the leadership of CEO Mr Wes Bush, resulting in the company merging from eight business sectors into four (Aerospace Systems, Electronic Systems, Information Systems and Technical Services). This restructure has included the divestment of shipbuilding interests to Huntington Ingalls Industries.

3.163 The Aerospace Systems sector is a product of the company's heritage dating from Northrop Aircraft's merger with Grumman Aerospace. The company later acquired Teledyne Ryan, which developed surveillance systems and unmanned aircraft, Today, the Palmdale Military Complex is a Government owned facility with Northrop Grumman, Boeing and Lockheed Martin being its three main tenants and is the location in which Northrop assembles the Global Hawk and Broad Area Maritime Surveillance (BAMS) unmanned aircraft, and manufactures the centre fuselage for the F-35 Joint Strike Fighter.

3.164 The first MQ-4C Broad Area Maritime Surveillance aircraft manufactured under the System Design and Development phase of the program (aircraft SDD1) will roll out of the factory in mid June and is scheduled to conduct its first test flight in late summer 2012, (third quarter of 2012). The BAMS aircraft is a unique marinised variant specifically designed for maritime surveillance for the US Navy.

3.165 The program was fully funded in the FY2013 Budget proposal sent to Congress and remains on track to achieve Initial Operating Capability (IOC) in 2015. The first Low Rate Initial Production lot build is also scheduled for 2015.

3.166 The key advantage of the MQ-4C BAMS over its competitors is its range, for example it would be able to get to Heard Island in the Southern Ocean, loiter, and then return to RAAF Edinburgh. The BAMS program has also benefited from the significant research and development for the Global Hawk, and has a proven record when it comes to system reliability and sensor performance.

3.167 Northrop Grumman has recently obtained export license approval from the US Government to conclude classified discussions with the Royal Australian Air Force and Defence Science & Technology Organisation on

sensor performance, and the company's eagerness to share information demonstrates their high confidence in the performance of the system.

3.168 Northrop Grumman told the delegation that they remain eager to engage with Australia on BAMS and outlined a range of support options they could offer to reduce the requirement for an all uniformed operator model.

3.169 The delegation was interested in why the US Air Force had decided to divest their fleet of Block 30 Global Hawks.

3.170 The company informed the delegation that the US Air Force currently has 14 Block 30 aircraft, with a further four in production and three more with money appropriated that is 21 aircraft in total. The decision to divest the aircraft was purely a budgetary one in the context of the FY2013 Budget Proposal and the Congress has not yet completed their markups of the Bill, noting the House Armed Services Committee had just recommended to block the decision.

Inspection

3.171 The delegation visit then conducted an inspection of the production facility, including a tour of the JSF centre fuselage assembly, and the Global Hawk and BAMS assembly lines.

Los Angeles

Reception hosted by Mr Chris De Cure, Consul General – Los Angeles

3.172 On its final night the delegation attended a reception hosted by Mr Chris De Cure, Australia's Consul General to the United States, at his residence in Los Angeles.

3.173 Mr De Cure had invited an array of business and artistic people from the Los Angeles area with an interest in Australia and it was an enjoyable end to the delegation.

Senator Mark Bishop

Delegation Leader

A

Appendix A – Delegation Program

United Kingdom

16 April

Plymouth/Devonport

Babcock/Royal Naval Dockyard Devonport
Site visits including HMS Torbay in refit (inside and outside), and an external view of HMS Vengeance
Tour of the nuclear fuelling/defueling facilities.

Spain

17 April

Ferrol

Working dinner at Parador Hotel with Australian DMO LHD Project Team and AWD Project representatives

18 April

Briefing by Navantia

Briefings by Australian team leaders on LHD / AWD.

View LHD 2 (future HMAS *Adelaide*) from wharf and inspect AWD Blocks (close to LHD 2 slipway)

Guided Tour of LHD 1 (future HMAS *Canberra*; under construction)

Guided tour by Spanish Armada personnel of an F100 frigate (VADM Cortés – Lead Armada representative)

Guided tour by Spanish Armada personnel of SNS *Cantabria* (VADM Cortés – Lead Armada representative)

Lunch hosted by Navantia

Depart Navantia shipyard for La Coruna airport

Depart La Coruna airport on Iberia flight IB 523

1Arrive Madrid airport

19 April

Madrid

Meeting with NH90 Program Managers (Ministry of Defence)

Visit Navantia headquarters

Road transport to Airbus Military (Getafe) to meet Airbus Military senior management

Light Lunch hosted by Airbus Military

Airbus Military Briefings (MRTT Program Briefs)

Airbus Military Getafe facility tour

Depart Airbus Military

Function at residence hosted by HE Ambassador Zorica McCarthy

20 April

Cartagena

Visit Navantia Cartagena shipyard for S80 Submarine project briefings

Lunch hosted by Navantia (Dockyard)

Guided tour of S80 construction areas

21 April

Madrid

Free Day

Germany

22 April

Hamburg/Kiel

23 April

Meeting with Hans Christoph Atzpodien, CEO and Chairman of the Board for ThyssenKrupp Marine Systems (TKMS), and Andreas Burmester, Chairman of the Board for Howaldtswerke-Deutsche Werft (HDW),
Guided tour of the dockyard, including a Type 212 submarine in maintenance, the submarine production facilities and the AIP development and testing facility.

United States

24 April

Washington

Meeting with MAJGEN Tim McOwan, Head Australian Defence Staff (Washington)

25 April

ANZAC Day Dawn Service

ANZAC Day Gunfire Breakfast, Embassy of New Zealand

Meeting with the Hon Mr Frank Kendall, hActing Under Secretary of Defense for Acquisition, Technology & Logistics

Meeting with Vice Admiral William E Landay III, Director, Defense Security Cooperation Agency

ANZAC Day Reception, Hosted by HE the Hon Kim Beazley, Australian Ambassador to the United States

Export Control Reform Roundtable

Roundtable with Defence Branch Heads, Embassy of Australia

Meeting with Mr Keith Webster, Deputy Assistant Secretary of the Army for Defense Exports and Cooperation

Meeting with Government Accountability Office

Meeting with Mr Brett B Lambert, Deputy Assistant Secretary of Defense, Manufacturing and Industrial Base Policy, Office of the Under Secretary of Defense for Acquisition, Technology & Logistics

Meeting with Dr J Michael Gilmore, Director of Operational Test and Evaluation, US Department of Defense

Meeting with Congressman Adam Smith (D-WA), Ranking Member, House Armed Services Committee

Meeting with Congressman Joe Courtney (D-CT), Member of House Armed Services Committee

Dinner hosted by HE The Hon Kim Beazley, Australian Ambassador to the United States

27 April

Meeting with Major General John F Thompson, USAF, Deputy Program Executive Officer, Joint Strike Fighter Program, Joint Strike Fighter Program Office

Boston

Briefings at Raytheon Company, Integrated Defense Systems, Hosted by Mr Sam Rose, Vice President of Integrated Supply Chain

28 April

Rest Day

29 April

Dallas / Fort Worth

Working Dinner

30 April

Briefing, Lunch and Tour Lockheed Martin Aeronautics Company

Depart Dallas Fort Worth Airport for Airport

1 May

San Diego

Briefings at General Atomics Aeronautical Systems

Briefings at Northrop Grumman

Los Angeles

Reception hosted by Mr Chris De Cure

3 May

Delegation members return to Australia