

“ASC’s Transformation from Project to Sustainable Business, Underpinning Its Future Contribution to the Australian Naval Shipbuilding and Repair Industry”

**A Presentation by
Mr Greg Tunny,
Managing Director and Chief Executive Officer
ASC Pty Ltd
to
USI of the ACT, Canberra
Wednesday 2 July 2008**

Slide: Presentation Overview

Today I’m going to cover the following subjects, some in more detail than others. I’ll look at the background and history of ASC but only very rapidly. There are opportunities to read books that have been published about ASC and will be published in the future – I won’t belay that other than draw out a few key points that set the scene. What I am going to talk a fair bit about tonight is the transformation that has gone on at ASC over the last several years.

If we go back in history not too long ago when the Federal Government chose to acquire those shares in ASC turning ASC from a private company into a Government Business Enterprise. Things were not good in the relationship between the foreign controlling entity within ASC and the rest of the shareholders – it was bad. The relationship with the customer was bad – with suppliers it was bad. It was all round a very difficult situation. A lot of water has flown under the bridge since then so much so, that I can at the start of this presentation say that ASC is now in very good shape and ready for sale which most probably will happen over the next 12 months or so. However, we don’t have a definitive time line as yet.

I’ll look a bit at facilities – there’s a lot going on: a bit about capability partners, then we’ll have a look at the submarine business, specifically the Through Life Support contract of Collins, the ship building business which of course encompasses the Air Warfare Destroyer (AWD) alliance and the building of those 3 new Hobart Class destroyers. I’ll touch on future submarines although it will be a little presumptuous and pre-emptive to talk too much about that subject before its even officially in the DCP (Defence Capability Plan) and given the current status of the White Paper.

Slide: History of ASC

Just to set the scene and I won’t go through all of the elements here. ASC was formed in 1985, won a submarine contract to design and build 6 Collins Class submarines in 1987. It delivered the first of those submarines in 1996, it delivered the last of those submarines in 2003. At almost the end of 2000, that tumultuous period about which I spoke came to a head and ASC became a Government Business Enterprise (GBE). In 2004 we changed our name from the Australian Submarine Corporation to ASC. In 2005 we were selected as the ship builder for the AWD alliance. The Phase 3 contract and establishment of the alliance didn’t occur until October 2007 which established us as the surface ship builder. We haven’t quite built a ship yet, it’s just a matter of

building a shipyard and then we will build 3 ships. And of course, in 2004 we secured a through-life support contract for the Collins Class. So that gives you a quick feel for the history of the company.

Slide: ASC Current Stakeholder Environment

ASC is the incorporated entity, our shareholder is the Minister for Finance, The Hon Lindsay Tanner MP. We have two capability partners – Electric Boat and Bath Iron Works – one relative to submarines the other relative to ship building. We ultimately have one customer – the Defence Material Organisation (DMO) although with regard to the AWD Alliance our relationship goes through the Alliance to the customer and industry entities. I'll talk a bit about the alliance later.

The capability developments, to the final requirements, which we implement both on submarines and destroyers for our end user – the Royal Australian Navy – the organisation which actually utilises operationally those products that we provide.

Slide: What We Do

What we really do, in the grand scheme of things, currently is 4 things. We provide Through Life Support for the Collins Class over a 25-year time frame. That means we undertake maintenance and we implement enhancements on the Collins Class. We will build 3 Hobart Class Air Warfare Destroyers as a member of the AWD Alliance. We operate the Submarine Training School located at HMAS Stirling in the West and just recently we've entered into a contract to provide an Escape and Rescue capability for the RAN. This includes two parts – the Escape and Rescue system which will be used to salvage a distressed submarine and we will provide, as of next week, submarine escape training also at HMAS Stirling, adjacent to the School.

Slide: ASC'S Key Attributes

Before getting into detail, I'll make a couple of points about ASC. In many ways we don't think of ourselves as a ship yard. We are a pretty sophisticated engineering and technology based business – a knowledge based business. The company is really about people and I'll belabour that point during in this presentation. We are not a classic ship yard. If you go to Bath Iron Works in Maine you'll see that they make the galley – they bend the stainless steel for the galley and they build a huge proportion of the DDGs. We are not like that. I tell people we'd be more like Boeing at Seattle. We're an integrator and consolidator of systems – that's how we built the submarine and that's how we'll build the AWD. We don't want to become a labour-intensive, capital-intensive ship yard because those sorts of shipyards inevitably become dead weights.

We intend to remain an agile organisation which doesn't over-invest in capital facilities - the type of ship yard, if we must be called a ship yard, which is designed for the 21st Century not for the 20th Century. We have a stable and long term order book which puts us well placed for sale. We are a very customer focussed organisation – more about that later – we used not to be. I believe our customer will now say that we are. We are establishing good credentials in regard to relationship contracting.

Slide: ASC Transformation

I didn't start out, when I prepared this speech, to talk about the transformation but the more I got into it I thought that I don't want to be just an engineer and talk about boring KPIs, on how good we are on submarines now – you've seen one KPI, you've seen them all.

The submarines are in very great shape now and going forward. We are in that regard doing a good job. I thought it may actually be of great interest to the audience to understand how ASC is moving from a situation where we were in very bad shape internally and with our external stakeholders. What we've done, how we've proceeded and so I'm going to focus a bit on that for a while.

Slide; ASC Since 2004

So obviously, some of the transformational issues have been forced upon us. There was an ownership change - that's a good way to start a transformation and it happened because we were in difficulties. There have been significant changes on the Board, a few changes of CEO and quite a significant change around the Executive Table.

We delivered the last submarine. We came to the end of what was originally what ASC was – and that was a project - and that's not what we think of ourselves as nowadays. It's very much a sustainable business. In fact it is the heart of the Australian naval shipbuilding and repair industry and will remain so for 30 years – longer if we don't trip ourselves up in the process.

The last Collins was delivered in 2003 – we had 600 odd personnel going south – we've actually more or less just finished the various fixes for the build this year. There are a couple that will go on for a few more years, it just takes a while to roll through the whole fleet and that will go on for a few more years.

We commenced the TLS contract in 2004. That was a fundamental change – we went from being a builder to a through life support organisation and we really didn't know how on Day 1 – we sort of had a vague idea and there's been a lot that has taken place to turn us into the right organisation to undertake that work.

We had to take on the Design Authority role as Kockums, the designer of the Collins and original design authority, moved out of the organisation. ASC had to step up to that challenge and we've become a surface ship builder, albeit only in an embryonic stage of that process during that time. So there all those are all what I call semi-external drivers that were forcing us to change.

And what's changed? A lot of things have changed. But ultimately the part of it - cultural change – has occurred and I'll talk about that in a moment, but there's a number of fundamental changes that have taken place in the organisation.

We have embraced new capability partners – I have mentioned them previously – Electric Boat and Bath Iron Works. We've developed or re-developed facilities and infra-structure – we've reformed our processes – we've re-organised the organisation,

upgraded skills, recruited a lot of people, focussed on both effectiveness and efficiency, but first of all effectiveness – getting it right, and then doing a little better and a little bit more cost-effectively every day and improved the process of communicating with stakeholders.

The old ASC treated the media as an evil thing and this has got more of the truth than the real story out – the Collins is a success and by world standards it has always been relatively successful. There was a problem with the combat system but that's going OK now too.

Slide: ASC's Transformation

So lets have a look at the 7 critical elements of cultural change that have underpinned this transformation within ASC.

I am going to look at each one of these in turn.

Slide: Values

I'm a big believer in values. I do believe, as it says there, that values define people and companies and they do underpin sustained success. ASC has made a big issue of the introduction of these corporate values into the organisation. They align with our strategy – they are woven into our strategy – they make it possible for us to devolve responsibility and authority with confidence that the people will do a job within the bounds of those values. And to make sure that it happens, we certainly have put values as part of our performance review system.

Half of everybody's performance review really is how did they perform in, and aligned with, the ASC values. So it was not enough that they achieve the objective milestones, that they achieve the good relationship with the customer, but they must do it while living the ASC values. And that has proven very successful for the organisation. I won't go through all of the values but every time we have an induction I go and talk to people about why teamwork is so critical in an environment where we deal with complex issues. One person can't do it alone.

I talk about 'pragmatic excellence' – it's not about gold plating. Sometimes it's about gold plating because that's what is essential, but sometimes it's about bronze plating because that's what is essential. It's about knowing the difference, it's about knowing the job well enough to move between the two and to make it appropriate to the situation.

Customer commitment is a big one. I'll talk a lot about safety later on. And improvement and learning are at the heart of much of what we do is continuous improvement and learning.

Slide: Safety Culture – OH& S

On the front of our Safety Culture – Operational Health and Safety – we do this first and foremost simply because it's the right thing to do. I didn't put it up there but it's rather enshrined in legislation and it's quite helpful to directors to do an awfully good

job of OH&S. But it clearly improves both our industrial relations and employee relations. I separate the two: one is involving the union and the other is a more preferred method, which is direct to the employee. It saves money. We've been able to self-insure, opting out of the State-based work cover system and saving a small fortune for our customer. All our savings have gone back to the customer to spend on .submarine capability and it aligns management and employees – we take the safety of everyone seriously.

Slide: Performance Summary

We see some data here and from build period statistics to where we are today. In 2007 we've come down a bit in 2008, right to the 5 line again which I more or less class as best practice – below 5. So we went down to 2½, bounced up again, came down to 5 again. Our industrial relations – no industrial relations lost time in the last couple of years.

Medically treated injuries, lost time injuries, has been a significant improvement. So this creates the right environment at work – it reduces cost and it underpins success and if you get a lot of safety things right, you get a lot of other things right.

Slide: Safety Engineering Culture

There's a 2nd element to the safety culture and that's a safety engineering culture. We introduced safety engineering and SUB SAFE awareness to all technical staff – they're taken through an induction course on this subject. We established a Safety Engineering Forum in 2006 which is well attended, not only by the RAN and the Collins SPO (Systems Project Office), but also by organisations external to defence interested in safety. ASC has now been appointed to the RAN SUB SAFE Board as a Full Member.

We piloted, in the last 6 months, a Whole-of-boat Safety Case Methodology in conjunction with a US company and we conducted a study into the applicability of the Sea King Board of Inquiry recommendations to the submarine environment.

Slide: Sea King

On that area, for example, out of the 256 Sea King recommendations, we found that there were 130 that were probably a little relevant to submarines. We prioritised them, we allocated people to them. A lot seemed to end up on my plate and the Board takes that very seriously – to see that they are being worked on and a number involved collaboration with the Collins SPO and Navy and it was very good to see we got real support out of these organisations.

Slide: and Safety Engineering Culture?

The whole submarine community is taking safety very seriously and so they should. People ask me why do you take this so seriously and I did give a speech at the Submarine Safety Engineering Forum and we talked about Challenger and Columbia–two space shuttle disasters – and at the end of that, when we take the two reports – they both said the same thing. NASA's safety culture had completely fallen down and

you know what? We can't afford to have that happen because submarines actually operate in a more hostile environment than the space shuttles. We can't afford to make these sorts of mistakes. And so we mustn't.

Slide: Customer Centric Relationships and Outcomes

The poisonous attitude we had between Defence and ASC couldn't go on. With our key suppliers you can't successfully maintain a submarine fleet over 25 years with that – so we had to change it. The TLS (Through-Life Support) contract enabled that change. It was a clean slate and it had drivers to enforce behaviour and one of the strokes of genius was that ASC signed up to a completely subjective relationship assessment. So for the first couple of years of the TLS agreement, the single biggest incentive we received was subjectively assessed by Defence. Our attitude, the way we worked with the Collins SPO and Navy. And that proved very powerful. It was also exercised very fairly – very objectively. In the last 4 years I've only complained about two things – out all of the quarterly assessments of the last 4 years on both sides and that was fine. The Commodore has sided with ASC and thought we were unfairly judged on something and reversed, not the whole score, just that one element that was an issue. It's really worked well for both sides – it's really changed the way we interact with our customer. It's been an enormous success.

Slide: (Graph)

The other thing it does – we focus on the customer's priority outcomes and the customer does that by saying these are my priority outcomes for the year and you're incentivised on them. This is what we've ended up achieving – from 05-06 and 06-07 we've moved from available sea days of 67% through 89% and this year at the half way point 96% - we'll actually end the year with 96%. So the most important objective measure for Navy, we've dramatically improved. It's been incentivised.

The rate at which we fix – the number of urgent defects – has decreased dramatically over the period – this was our incentive achievement against all these categories. From 06-07 we're kicking goals all over the place in 07-08. So ASC – and it's been a slow transition over 4 years – really stepped up and is now delivering very well. I think we are delivering at best practice. We're also delivering on schedule – we're ahead of schedule, those two are on schedule – a key metric.

Slide: One Team

Our focus is on one team. The old ASC wasn't one team and when you operate in a highly complex environment you have to operate as a team. No one person, no one department, no one organisation can do it all, in a highly complex environment like Collins or the AWD. So we team with our customer – we are building a committed supplier network and we're breaking down the silos internally and empowering integrated project teams, cross-functional teams within the organisation.

In fact we've developed within the organisation a matrix of matrices – in fact one could say it's a very complex – it looks a simple matrix but in reality it's a very complex matrix inside the organisation. Which is odd as I force people to be as simple as much as possible all the time. But we are a multi-business – not just in submarines

and ships, but we have multiple types of submarine activities. So we do need to be able to grapple with organisational complexity and I think we are now doing it quite well, but we are doing it well because a number of things are being fixed – because a complex organisational structure can work if a number of elements enable it and support it. But if they don't, you tie yourself in knots.

Slide: Learning and Management

We did a survey at the end of 2004 which covered many areas. This is one of them. I only draw your attention to the last one and all that says is that in 2005 people thought there was a real “them and us” attitude between management and staff. In 2006 it was much reduced so the “them and us” perception was much reduced. All the rest of the metrics are actually the other way round so we worded the question wrong there. Usually you want the blue to be higher than the red - in that one we wanted it to be lower.

The other one – there was a general feeling in 2005 that management sucked and the good news was at the end of 2006 management sucked less. But the gist was we still sucked.

Slide: Learning and Improvement

Learning and Improvement is fundamental. In an information age, information and knowledge expands exponentially. Once upon a time you could work a career and build 20 or 30 years of experience. In the future you can build 20 or 30 years of experience but you have to figure out which half of it to throw away. 20 or 30 years of experience without re-invention and learning will be positively dangerous. So we try and embed this approach within our organisation. We embrace improved business process engineering during the alignment of our IT systems to those business improvements.

We have a significant leadership development program - multiple safety initiatives. These are joint company-DMO funded training exercises. We've established 3 Masters programs and we are working on the establishment of a fourth. And of course refreshing and consolidation of the tools that we underpin our learning environment with.

This has created a lot of improvements in effectiveness and efficiency – our customer loves efficiency – and I'll show you one statistic tonight.

Slide: Efficiency – Case Study

This is looking at how we process work packs. It almost doesn't matter what a process work pack is or how we do it – it's something that engineers and planners prepare and the blue collars execute. Here is how long it took to do a work pack in the Full Cycle Docking of HMAS Waller. Then we see how long it took to do a work pack for HMAS Dechaineux and as we come down we see for HMAS Farncomb and this was the trend on HMAS Sheean – there are reasons for why that one is a bit funny. But what you can see is an overall trend downwards. We measure ourselves extensively

and relentlessly. I could show you hundreds of metrics – we look at them all to ensure that we are going in the right direction.

Slide: Measure and Model.

This brings us to the 7th element of cultural change - measure and model. Importantly it's measure and model. A lot of people implement metrics and KPIs (Key Performance Indicators) that they measure – that's great, it's a good start – KPIs are essential. However, just measuring is not enough – if you really understand your metrics and you really understand your business, you can model it. With the modelling comes the opportunity to project into the future and it enables you to take pro-active measures to plan better and ultimately execute better.

Slide: Graph

Just one area of this. We try and project our KPIs out over at least 6-12 months, at least 12 months – often we try to do it over a 2-year timeframe. And this was an area where maintenance amendment proposals (MAPs) – every time somebody finds something in the zillions of maintenance procedures that we have on Collins that need to be changed, they raise a MAP. And we had a huge back-log and of course a huge back-log means there are things that need to be done better and differently – that haven't flowed through to the shop floor, so its important. And we increase the team and we used to be going relentlessly the wrong way and always down, but we are able to project, for various reasons, we were going to have a big spike, statistically projected, and the reality was panning out pretty well. Time has moved on and we overshot a bit and then we came down. But is this idea - measure and model, project the future – don't just do what we did in the past. That has been a major leap forward.

Slide: Element Averages?

And we measure all of these cultural aspects as well. The slide I showed you before is actually part of a bigger assessment which we go through every 2 years to see how the workforce believes our culture and attitude is improving.

Slide – People, Process and Tools

Of course there is People, Process and Tools. I'm not going to belabour much of this. We're doing a lot of things that are best practice in this arena. I wouldn't say that we're doing necessarily anything much better than anybody else. I believe that we have a fairly comprehensive suite of initiatives. On the people front, a lot of it is just more people, from that low of 600 back in 2002-3 ASC now has 1400 people, of which 1100 are found on the submarine activity. It will grow to nearly 2000 over the next 3 years as AWD ramps up. But even at its peak there'll be more people dedicated to submarines than to the destroyer contract. There's a lot going on on both.

We continue to bring in people from overseas at the same time that as we are hiring a lot of graduates because it takes a long time to turn a graduate into a lead engineer in a submarine engineering team. And we don't have them indigenously in this country. They don't come from ASC, they don't come from anywhere (in Australia) so we've injected Brits into the upper middle area of our engineering team. We are hiring a lot

of apprentices as well as graduates – strengthening middle and executive management and doing more and better training. Getting work-life balance right, not burning people out, we're not losing people. Our staff turnover group wise is about 8%, industry average is probably 12-13%, with (ASC) WA at 22% compared with WA industry at over 30%. We do offer decent pay, decent conditions, a decent balance – if you don't get that balance right you're not going to last for the long haul. We are not in a sprint – we need people to last with our organisation because of the complexity of what we do. We can't just retrain them in 5 minutes – it takes a year to get it right.

Slide: Who We Are

It is all about our people. If our key facility burnt down tomorrow we could go forward – it wouldn't be pretty, it wouldn't be efficient, but we could go forward. But if we lost 10% of those people – the key 10% - we'd be in dire straits. It is all about people, not about the facilities.

Slide: Project Management Awards

These are the people who won this year the Australian Institute of Project Management's prize for the project of the year award. In an era where there's huge projects around the nation. ASC, with its Waller Full Cycle Docking and the upgraded Combat System and introduction of the Heavy Weight Torpedo, won the project of the year, not just the defence projects but all projects.

Slide – Process

Process – a lot of good standard stuff. We are standardising our processes between South Australia and Western Australia, standardising and harmonising our IT systems as we have had different IT systems in the West and the South - different processes in the West and the South. Now we have the same. Now we can easily move people between the two. Now I can share work between the two across a high bandwidth internet system without even moving the people, which is really good because I can't keep enough people in that boom state of WA. I have to do a lot of fly-in/fly-out to get the job done. Nobody can bid from there.

Slide: CMMI

Something of our process. We've introduced some very sophisticated measure called a CMMI (Capability Maturity Model Integration) system, widely used in the electronics sector. We're applying it to the whole of project management and engineering organisation within ASC. The point of this slide is – this is what it looked like when we first measured it back in 03/06 - a lot of red – red isn't good. This is what it looked like when we measured it in the 1st quarter of 2008 – much less red and a lot more green.

This is a very comprehensive, very sophisticated framework within which processes - the maturity of your processes and procedures - are assessed. The point is - lots of green, lots less red – going in the right direction.

Slide – Tools

We've upgraded our enterprise resource planning tools, finance tools, introduced extensive video conferencing, so people in the West might be managed by somebody in the South. They just sit in front of a video camera and they are just effectively in the next room. Location and distance are not treated as barriers to an integrated team any more. Yes, sometimes we fly people over there because they physically need to do something – but we are a virtual integrated organisation, introducing a Product Life Cycle Management tool, new 3-D CAD (Computer Aided Design), new 3-D visualisation, sorting out single truths within our database. Now we have 5 points of truth for build materials for the submarine – we aren't quite down to 1 yet, we are still working on that.

We introduced bar coding: a very important example - people swipe every task they do now. It means we know where you are up to all of the time. No, we don't swipe when you go to the 'loo, which the unions were very worried about. But that means not only do we know where we are – we know how much its cost. ASC can't tell you how much each submarine cost to build: it can tell you how much 6 cost: it can't tell you how much each one cost. Now we can tell you how much each work pack costs. Now we can tell you when we are up to in each work pack, not where we are on schedule on a 2-monthly basis. That enables us to break things down more , which enables us to optimise things more and that's how, over the last 4 years, we've done 35% more scope with 10% real increase in dollars. It's a huge amount of productivity improvement, to be fair because we were really dreadful when we started.

Slide – Current Submarine Operations

Facilities – good stuff. HMAS Stirling – we have a whole bunch of huts at Stirling where we've had people for decades living in ATCO huts. We're within a year of completely abandoning that which is pretty important. We have a lot of ATCO huts in Osborne (SA) as well. Now once upon a time, people would work in an ATCO hut because they had to. In the world of full employment, it's not so easy to keep people happy in an ATCO hut any more – not unless you pay them a facility-based amount of money that they do in a mine-site. So we're getting rid of the ATCO huts.

We had to work on the submarine out in the open at the Tenix (WA) ship-lift - exposed to the elements is not really ideal.

Slide: Common User Facility (CUF)

What we have done is build a new building at the WA Government's Common User Facility (CUF). They're providing us with a transfer system to get the submarine over to our big shed and office. They're providing a floating dock. We're on schedule, we've opened our facility. The WA Government is a year behind but in about 9 months we'll be operational.

Slide: ASC West

So this is our facility – state of the art maintenance facility in the West with the office space and the workshops embedded in the side of the maintenance hall. Engineers can walk out of their office, across a gangway, onto the submarine. No walking around

the site, no lost time. Trades walk off the submarine – their tools are within 10 metres. It's a very efficient facility.

Slide; WA Facility

That's what the WA Government hopes the whole facility will look like in future as the oil and gas and defence all beat a path to their magnificent Common User Facility and it may well transpire that way.

There's a lovely little company next door that makes luxury boats that cost a million dollars a metre – submarines cost more like two to three million dollars per metre. Luxury boats that cost that much are really nice – they're very impressive.

Slide: Osborne Submarine Facility Upgrades

Back in Osborne, just because we're building a new building in the West - I'll show you the new shipyard in a moment - doesn't mean that we're not doing things in Osborne. This is because we need to transition from a build yard to a support yard, so we're building new warehouses, so that we're laying everything that comes out of the submarine down in this shed and that makes it difficult to move around the shed to work on the submarine. We're building new mechanical laboratories, hydraulics, maintenance facilities and NDT (non destructive testing) laboratories, because when you built, stuff arrived, it was in good shape, you took it off the pallets, put it into the skids, you put it into the conical sections of the submarine and stuck it all together. You don't have stuff laying around, pulling it apart and fixing it – it's a different environment. We're adjusting our facilities to the environment.

Slide: Osborne Shipyard

This is the shipyard (at Osborne). Here is the Common User Facility that the (SA) State Government is funding. There will be a hard stand and it will be a big ship lift, and it will be a wharf. Here's where we are redeveloping the old ASC Engineering site into ASC ship building and this is the submarine site.

Slide: Future Shipyard

And this is what it will look like – mostly by September 2009 – except for this large ship lift which won't be completed until about February-March 2010, but we won't need it straight away, so that's fine.

There's the (SA) State Government's contribution – the hardstand heavily reinforced – the wharf. That's an integration sector work building. These are one-module halls, blast and paint facility, fabrication workshops. This is our administration and engineering building. This is the AWD Systems Centre, which is the home of the Alliance, the management of the Alliance. And this is our maritime skills area – our training institute for cross-training trades - people who are moving from other industries into ship building.

Slide: Capability Partners – EB & BIW

Electric Boat is the lead submarine designer from the US. Bath Iron Works is the lead Air Warfare Destroyer designer and builder from the US. Both are part of the General Dynamics stable. Why do we use these companies, people sort of ask – don't the Europeans do it better? There are a lot of reasons to go for the US. The US has actually come a long way.

Slide: Bath Iron Works

This is where Bath Iron Works was in 2000. This is where they were in the last international survey in 2005 and this is how they've really improved and we like that because we're actually taking all the lessons they learnt to improve and implementing them at our ship yard in the first place.

Slide: TLS Strategic Objectives

In the submarine business we have a lot of strategic objectives – I won't go through them all. I'll mention this one – the second one – a strategy balancing submarine availability, capability and life cycle costs – is an absolute key one. If we did just maintenance, they'd have quite a lot of available submarines as efficiently as possible. But after a few years they couldn't be as capable as they should be – so we have to put enhancements on. But enhancements take a long time and they disrupt the maintenance so instead of a major maintenance taking 2 years, it takes 2¾ years or something. So there's a time – as you do all that it costs more. Of course you don't have unlimited money – which would be nice but we don't.

So, we try and balance all those strategic objectives that you see there and deliver the Commonwealth with value for money. I think that we are doing a pretty good job but we still have to do even better.

Slide: Work Undertaken Under TLS

This is the type of work we do. We undertake Full Cycle Dockings and Mid Cycle Dockings. I'll leave that for reading on the (USI of ACT) website. It's detail.

Slide: (Bar Chart)

This is an interesting one though. It's about how many enhancements we are putting on each submarine. Notice the curve – this was the first Full Cycle Docking – the next Full Cycle Docking and this is the one we're working on now. This is a Mid Cycle Docking where we're putting more on than we did with the 2nd Full Cycle Docking. That's what we've got planned for the next one. We're doing a lot of design work - a lot of enhancements. This is causing us a lot of pressure on the time taken – it takes “more work, more work, more work” to keep the submarines at the leading edge. It's like running a Formula One team – they never get to stop.

Slide: Special Forces Capability

This is an example of the sophisticated 3-D tools we're using in developing something like the Special Forces Capability.

Slide: ASC Engineering Capabilities

Our engineering team has all the skills to address submarine engineering.

Slide: (Bar Chart)

This shows you how we compare on an international basis. The RAND Corporation did a study for the UK to tell them what the minimal essential design team would look like to maintain design skills. The dark blue is what RAND said for the UK – the light blue is what we have. This was early in 2007 – we even more approach the essential team requirements now across all disciplines, so we are moving continuously in the right direction.

Slide: (Graph)

And we are measuring ourselves again – we are measuring our design capability. We're being helped by Electric Boat to measure how good we are at design. The trouble is that the curve gets harder and harder and harder to climb as we go.

Slide: The AWD Team

AWD is an Alliance. The Alliance involves the Commonwealth of Australia in the form of DMO, ASC - the ship builder, Raytheon Australia - the Combat Systems System Engineer. The ship designer is Navantia from Spain and the core Combat System comes via a US Foreign Military Sales (FMS) route from Lockheed-Martin who's the OEM (Original Equipment Manufacturer) for the Aegis Combat System.

Slide: AWD Overview

I've already said all that.

Slide: (Ship Photo)

That's what the Spanish F-100 looks like – the AF-100 is actually based more specifically on the F-105 which is a technology refresh version of the F-100 that the Spanish are currently building, only slightly ahead of us.

Slide: AWD Program Objectives

The objectives of the Program are to deliver 3 AWDs. Of course on time, on budget – everything perfect, and to contribute to the development of Australian industry which is a big challenge although, we won't achieve the same levels of Australian Industry Involvement (AII) that were achieved on the Collins program. The world has just changed from those days and we do things differently and I think better. We don't make work unnecessarily any more.

Slide: AWD Alliance Principles

The principles of the Alliance – key principles – are collaborative decision-making, investment in project phases, share the pain game, which means that if we run over

cost, 50% of the over-run goes to Defence, 50% to the industry participants. If we save money, we get 50%, Defence gets 50%. It's an equal distribution of the pain and the gain.

Slide: Contracted AWD Build Program

The ships will be delivered – or the baseline schedule of the contract - at the end of 2014 for the 1st, 2016 for the 2nd and mid 2017 for the 3rd. So far we are on track. I note that we haven't yet completed the 1st year of the build phase so really we are in the phase where there's a lot of planning, development, procurement specifications for major equipments – all these sort of things – still building the ship yards, so over the next 12 months our key issues are all the milestones associated with the facilities, which we need before we can cut steel in the 3rd quarter of next year. PDR (Preliminary Design Review) and CDR (Critical Design Review) at the end of this year and end of next year (respectively) both for the Combat System and the Platform. So these are the key milestones – we don't really get into the building activity until we've reached that cut-steel point.

Slide: Industry Opportunities

The ship will be in blocks. ASC will build about a 3rd of them, about 2/3rd will be sub-contracted out and we will stitch them all together in Adelaide. This is a critical element – we haven't distributed the blocks for political reasons, we've distributed the blocks because we didn't want to build too many facilities - it costs too much and you can't have under-utilised facilities in the 1st place and we didn't want to have to hire 3 times as many people for very short periods which gives you industrial problems and recruitment problems. So we are distributing that workload and we're utilising facilities elsewhere around the country. We're keeping the most complex blocks because they're on a critical path – they're the high risk elements and those are the things that ASC handles very well.

Slide: AWD Sub-Contract Procurement

We've got a lot of sub-contract procurement underway on the Combat System – there's 11 RFTs (Requests for Tender) out: underwater systems winners will be announced this month, so we're on track there and the big block – the module sub-contracts (we call them blocks because the Spanish call them blocks) – that RFT has gone through a short listing RFP (Request for Proposal) process and the RFT will hit the streets this month.

Slide: Future Submarine – Collins Replacement

Submarines are going to remain strategically important. I think there have been some excellent papers and studies completed over recent years. The Kokoda Foundation study which Dr Ross Babbage headed, there's also been studies by ASPI. I think most of the strategic luminaries consider the submarine crucial to our force structure for the future. There's lots of submarines in the region – these countries are buying more submarines, better submarines – and Australia's wealth depends greatly on the Sea Lanes of Communication (SLOC) that go from the Middle East, around to North-East Asia and up through South-East Asia and across the Pacific. We see it's on those key

sea lanes – our economy depends on these key sea lanes. Naval force will be critical into the future and submarines as an element of that naval force will be critical, so will elements like the AWD. I think ASC is well positioned on both of those. So there will be a future submarine I believe.

Slide: Future Submarine

This is a generic time line based on Collins time line, which says we should have started thinking about it already – but because of the White Paper we probably won't see a DCP (Defence Capability Plan) entry until 2009, 1st pass around about 2011, 2nd pass around about 2016 and the 1st one in service in 2025. If we build 6, the 6th won't enter service until 2032 – which exactly matches the end of life of the Collins Class. And by the way it will be a bit of a trick managing both the Collins support while we're doing the build there – it will have to be finely balanced.

Slide: Concept Formulation

We're already thinking about concepts for the future – there's a lot of issues. I'm not going to go through them all. I think the Kokoda Report in particular, where you can get from the Kokoda website and download it – deals with the technologies and requirements that are likely to be there in the future. We're taking those sorts of things with more detail and coming up with the concepts and looking at what sorts of prototypes we can trial on Collins, such as Air Independent Propulsion modules – which is a pilot, for example, that we could trial on Collins before going on to the Future Submarine.

Slide: Future Submarine Enhancements

The new submarine will probably be in the order of 3,600 tonnes – there are no military-off-the-shelf (MOTS) options unless the requirement changes very substantially from what it is today, for the smaller European style submarines to be applicable. By the time we get to the build phase for the next submarine, I think ASC can play a role as co-designer – we don't see ourselves as the designer- that's getting ahead of ourselves. We can play a valuable role as the co-designer and we will have by then 30 years of large conventional submarine experience. There are others who've got lots of big nuclear submarine experience, there are companies that will have vast amounts of small conventional submarine experience, but probably we, and I guess the Japanese, would have I think the most large conventional submarine experience by that time.

Slide: ASC's Future?

So that's the future. We've gone through the 10 years of ASC – delivering the 1st Collins, delivering the 6th Collins. We're at just past the 20 year point with us getting past the AWD effective date. By 30 years we're out at the point where the Future Submarine effective date will be, at the point that ASC has 30 years of experience.

Slide – ASC Annual Report

Thank you. I'm happy to answer questions.