Senate Finance and Public Administration Legislation Committee
ANSWERS TO QUESTIONS ON NOTICE
ADDITIONAL BUDGET ESTIMATES 2011-2012

Finance and Deregulation Portfolio

Department/Agency: ASC Pty Ltd
Outcome/Program:
Topic: Submarine Sustainment

Senator: Johnston
Question reference number: F48
Type of question: Written
Date set by the committee for the return of answer: Friday, 30 March 2012

Number of pages: 5

Question:

a) On what dates are HMAS SHEEAN and HMAS RANKIN due to complete their Full Cycle Docking?
b) What are the dates for commencement and completion of the second FCD for each of the six vessels in the Collins fleet?
c) What is the current planned maintenance cycle for the Collins fleet? i.e. the duration of, and interval between Full Cycle Dockings, Mid-Cycle dockings, Intermediate Dockings, Battery Replacement etc.
d) What was the original intended maintenance cycle for the Collins fleet? i.e. the duration of, and interval between ,Full Cycle Dockings, Mid-Cycle dockings, Intermediate Dockings, Battery Replacement etc.
e) What has been the labour requirement in person-hours, and duration in weeks, for each of the Full Cycle Dockings competed so far (and currently underway) for the six vessels of the Collins Fleet?
f) How many person-hours are expected to be needed for each of the forthcoming six FCD?
g) What responsibility does ASC have for monitoring the long-term logistical and engineering sustainability of the Collins fleet? What resources within ASC are directed towards this task? How well does ASC understand the long-term logistical and engineering sustainability of the Collins fleet?
h) Since 2004-05, what have average annual workforces devoted to (a) shipbuilding and (b) submarine work undertaken by ASC? What has been the break-down of the two workforces in terms of executives, engineers, production workers and administrators?
i) Please provide a definition of "Materiel Ready Days".

Answer:

a) This response has been prepared in consultation with the Defence Materiel Organisation (DMO). HMAS SHEEAN is scheduled to complete Full Cycle Docking on 31 July 2012. HMAS RANKIN is scheduled to complete Full Cycle Docking on 25 October 2013.

b) This response has been prepared in consultation with the DMO. Planned commencement and completion dates for the second Full Cycle Dockings (FCD) for each of the Collins Class submarines are:

Submarine	Planned Commencement	Planned Completion
COLLINS	01 Aug 2012	22 May 2015
FARNCOMB	31 May 2014	20 Mar 2017
WALLER	29 Mar 2016	17 Jan 2019
DECHAINEUX	26 Jan 2018	15 Nov 2020
SHEEAN	25 Nov 2019	14 Sep 2022
RANKIN	23 Sep 2021	13 Jul 2024

c) This response has been prepared in consultation with the DMO. The planned maintenance cycle is based on the eight year operational Usage Upkeep Cycle (UUC) as reflected in the approved Integrated Master Schedule for Collins Class submarines. The following planned durations and gaps apply, noting that these are subject to variation depending upon capability insertions, and the treatment of critical defects and obsolescence:

- Full Cycle Docking (FCD) – nominal duration of 33 months, the gap between completion of the most recently completed FCD and commencement of the next is notionally eight years +/- two months. FCDs include a main battery replacement;
- Mid Cycle Docking (MCD) – nominal duration of 27 weeks and is conducted mid-way between FCDs, with a typical FCD to MCD gap of four years. MCDs also include a main battery replacement;
- Intermediate Docking (ID) – nominal duration of 20 weeks and is conducted mid way between FCD and MCD, with a typical gap FCD/MCD to ID of 22-24 months. IDs do not normally include a main battery replacement.
- Intermediate Maintenance Availability (IMAV) – nominal duration of 10 weeks and unlike docking availabilities, does not require removal of the submarine from the water. An IMAV occurs mid-way between successive dockings (FCD/MCD/ID), with a typical gap of 8-10 months from the last docking. IMAVs do not normally include a main battery replacement.

d) This response has been prepared in consultation with the DMO. The original maintenance cycle for the Collins Class was based on a six year operating period followed by a FCD, which effectively makes up the Usage Update Cycle (UUC). The following planned maintenance durations and gaps applied to this UUC:

- Full Cycle Docking (FCD) - duration of 52 weeks, the gap between completion of the most recently completed FCD and commencement of the next was notionally 6 years;
- Mid Cycle Docking (MCD) - duration of 16 weeks conducted mid-way between FCDs with a typical FCD to MCD gap of 146 weeks;

- Intermediate Docking (ID) - duration of 10 weeks conducted mid-way between FCD and MCD, with a typical gap FCD/MCD to ID of 72 weeks; and
- Assisted Maintenance Period (AMP) - duration of 4 weeks and unlike docking availabilities does not require removal of the submarine from the water. Three AMPs were evenly planned between docking availabilities, allowing a typical 15 week operational window between maintenance availabilities. The exception to this timing was only a three week period for sea acceptance trials between completion of FCD and the commencing the first AMP of a cycle.

e) This response has been prepared in consultation with the DMO. The labour hours associated with the conduct of Full Cycle Dockings (FCD) have varied dramatically due to the workscope of a FCD not being accurately defined since build, incorporation of enhancements and the need to remediate a range of legacy issues, eg generators and main motor.

The production workforce labour hours for the first six Collins Class FCDs are detailed below:

Submarine	**Labour (hours)**	**Duration (weeks)**
COLLINS	776,521[1]	232
FARNCOMB	528,978	100
WALLER	780,000	156
DECHAINEUX	1,014,133	200
SHEEAN	939,239[2]	235(276)
RANKIN	924,854[2]	235(290)

Notes:
1. COLLINS labour hours include 140,000 hours to repair weld defects from build.
2. SHEEAN and RANKIN are currently in FCD and labour hours reflect the current estimated duration. The figure in brackets includes a period of lay-up prior to entering into the FCD.

f) This response has been prepared in consultation with the DMO. The planned production labour hours for future Full Cycle Dockings (FCD) is 756,000 hours to conduct preventative and scheduled maintenance activities, with an additional 122,000 hours planned for treatment of obsolescence and other system upgrades. This provides for a planned production labour total of 878,000 hours per FCD. Additional hours may be required to address unscheduled corrective maintenance discovered during the course of the FCD.

g) ASC's responsibility is dictated by the Statement of Expected Operational Outcomes (SEOO) under TLSA and the Statement of Work for ISSC.

In accordance with TLSA, ASC sources and supplies materials for planned maintenance for FCDs. The CoA is responsible for supplying all materials for activities in WA and for emergent tasks during FCDs. Under ISSC, ASC is transitioning to become responsible for the entire supply chain including identification of required stock holdings.

The short term logistical engineering for maintenance is production feedback at each instance a maintenance routine is completed.

As a discrete SEOO task, a review was conducted last FY on ten systems to address the implementation time of maintenance, UUC Phase two, as the new UUC increased the maintenance burden in terms of duration.

This FY, ASC received a task in the SOW to conduct Logistic Support Analysis for five systems.

ASC has a team of approximately 40 staff within the ILS and Logistic Engineering group and is supported by additional design engineering and supply support personnel.

ASC understands the requirements for the long term logistical and engineering sustainability and knows the submarine systems that are unreliable and impact availability and maintainability.

ASC has conducted analysis of data for the past ten years to scrutinise at the system level those systems that are detracting from Submarine Availability. ASC is using this tool to prioritise routine activities.

ASC has had a long standing engagement with DMO and the Navy through the build cycle and for 15 years of operation. Much of the intellectual property on the construction and maintenance support is held by ASC.

Through this extended involvement and the many working groups (SUBSAFE, production, planning, safety, document control, configuration management, quality assurance) in ASC and the Integrated Product Teams with DMO and the Navy, ASC provides advice and assistance to improve the performance of the CCSM.

Please refer to the spread sheet on the following page.

A “Material Ready Day” is defined as a day in which a submarine is not in a planned maintenance activity (Full Cycle Docking, Mid Cycle Docking, Intermediate Docking, Certification Extension Docking, Intermediate Maintenance Availability) and does not have an extant Priority 1 (SAFE) Urgent Defect.

Breakdown of Workforce
Question on Notice No. 48H

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
a.) Shipbuilding Business - ASC Shipbuilding Pty Ltd								
Executives	2	3	3	3	3	1	3	2
Engineering (Note 1)	14	24	52	126	298	154	198	209
Production (Note 2)	1	2	3	2	0	307	457	638
Administration (Note 3)	3	8	27	16	20	67	46	54
	20	37	85	147	321	529	704	903
b.) Submarine Business - ASC Pty Ltd								
Executives	10	11	10	11	12	10	10	10
Engineering (Note 1)	317	347	353	386	361	351	331	377
Production (Note 2)	610	658	638	711	741	634	606	661
Administration (Note 3)	121	135	148	148	138	91	135	125
	1058	1151	1149	1256	1252	1086	1082	1173

Please note: department restructure in 2009/2010

Note 1 - Engineering: also includes Subsafe, Quality & Configuration Management

Note 2 - Production: also includes Planning, Scheduling, Facilities, Supply Chain

Note 3 - Administration: includes Human Resources, Finance, Legal and B&IS