Eleventh Report

Ministry of Defence (MOD)

The United Kingdom's Future Nuclear Deterrent Capability

1. The United Kingdom first deployed a submarine-launched nuclear deterrent in 1968. Since then, successive governments have been committed to a policy of continuous at sea deterrence, meaning that at least one nuclear-armed submarine is on patrol at any one time. In its 2006 White Paper[9], the Government announced its intention to maintain the United Kingdom's nuclear deterrent capability and set out its plans to build a new class of submarines to replace the current Vanguard fleet and to participate in the United States' Trident D5 ballistic missile life extension programme.

2. The Ministry of Defence's (the Department's) ability to sustain its nuclear deterrent capability in the future is greatly supported by its collaboration with the United States. The new class of submarine is likely to remain in service beyond the extended life of the existing Trident D5 missile, which will be renewed in 2042, and needs therefore to be compatible with any successor missile developed by the United States. The Department has received a series of assurances from the United States that any new missile will be compatible with the United Kingdom's new submarine class. Nevertheless, the concern remains that the Department has no direct control over the development of the new missile.

3. The future deterrent programme is still at the concept phase. The Department has yet to make many decisions about the principal parameters of the submarine design, the type of nuclear reactor, and the design and size of the missile compartment. The Department expects to make these decisions by September 2009. To respond to an already challenging timeline, the Department plans to overlap the submarine's design and construction phases.

4. On the basis of a Report from the Comptroller and Auditor General, the Committee took evidence from the Accounting Officer and supporting witnesses on: making important decisions, managing dependence on the United States and managing the programme effectively.

PAC Conclusion (1): The Department's existing cost estimates do not provide an accurate baseline against which to measure progress. The forthcoming revised cost estimates should distinguish between future deterrent costs and the general overheads of the submarine industrial base, and provide clarity as to how the Department intends to deal with VAT, inflation and contingency.

[9] The Future of the United Kingdom's Nuclear Deterrent (Cm 6994).

5. The Department accepts that at the time of the PAC hearing (November 2008) the cost estimates were not sufficiently developed to provide an accurate baseline. This was to be expected nearly one year prior to the Initial Gate investment decision. Since then work has continued on developing the cost models and the Department is on course to have a robust (and independently assured) cost model to support Initial Gate in Autumn 2009. The cost model will distinguish between the direct costs of the future deterrent and the general overheads. As overhead costs are typically apportioned across multiple projects, the deterrent cost models consider the overhead costs across the whole of the submarine industrial base in order to assess the costs, which should correctly be attributed to future deterrent.

6. In accordance with the Department's approvals process, the initial gate business case will state how VAT, inflation and contingency will be handled. The Department has currently assumed zero rating will apply to the submarine platform in the same way it currently applies to the Astute programme, whereas other elements of the programme (such as infrastructure at Faslane, Coulport and Devonport, Command and Control Infrastructure, and nuclear warheads) may possibly incur VAT. The actual tax treatment cannot be determined until nearer the time the contracts are placed and the precise manner in which we will procure the programme elements has been determined.

7. The costing model will provide detailed inflation indices to be used for each category of expenditure (for example: labour, materials and construction), thereby allowing a full analysis of the effects of inflation on the programme. Uncertainty and risk will be incorporated into cost estimates in the usual way. The Department will, via the Future Deterrent Management Board, maintain oversight of costs across the programme and take action where required to control costs, for example by making design trade-offs where necessary.

PAC Conclusion (2): In September 2009 the Department has to make key decisions about the submarine design which will have implications for the procurement and support costs of the programme for decades to come. Given the importance of these decisions, the Department should commission independent validation of the assumptions underpinning its cost models and assess the reasonableness of its estimates using historic trend analysis.

8. The Department decided some time ago that the cost model should be subjected to independent scrutiny and in October 2007, following a competition, the Department commissioned Deloitte to provide ongoing independent validation and challenge of the design of the cost model and of the cost inputs and assumptions that underpin that cost model. Deloitte's work will culminate with a formal assessment of the cost model, which will be incorporated into the Initial Gate Business Case. Deloitte will also apply past experience and lessons learned from other major acquisition projects in providing their opinion on the reasonableness of the cost estimates.

9. This work is supported by assurance activity conducted by the Department's cost assurance team. This team, which is independent of the Future Submarine delivery team, will also conduct an independent cost estimate to provide a benchmark. Other benchmarking activity includes cost estimates provided by the US Government and UK industry. A historic trend analysis is also being conducted by the Department to assure the reasonableness of its estimates. The outcome of this activity will be presented at the Initial Gate decision point.

PAC Conclusion (3): Suppliers to the submarine industry constitute a highly specialised industry sector, with a number of monopoly suppliers. Given the imperfect market environment, value for money will be hard to achieve. The Department should specify exactly how it will ensure it obtains value for money from its suppliers and set out performance indicators for the programme, against which it will report to Parliament.

10. The Department agrees that achieving value for money will be challenging given the number of monopoly suppliers in the sector. The overall approach will need to be one of partnering with a clear understanding of where risk can and cannot be transferred and clear demonstration of value for money. At the strategic level, the Department has established a steering group with representatives from HM Treasury and the Shareholder Executive to support the commercial work and the driving of value for money from monopoly suppliers.

11. Internally, the programme will be subject to the usual approvals process, with funding only being released once value for money has been demonstrated. Central to this is the Future Deterrent Value Book, a comprehensive document that clearly identifies 15 key tenets of value[10]. The Value Book will set out the strategy for delivering through life value for money through the management of the programme and its commercial / procurement activities. The key areas of value are clearly documented and updated regularly to demonstrate progress and delivery of value. These are:

- Should Cost Modelling & Benchmarking: the Department will seek to set its budget lines based on much more rigorous cost modelling which has been informed by robust benchmarking and should-cost modelling;
- Commercial Constructs: the Department will work with Industry to introduce commercial constructs best suited for the complex nature of the programme and the industrial landscape;
- Incentivisation: the Department will develop appropriate incentivisation mechanisms to help deliver our key requirements for each phase;
- Project Controls & Performance Management: the Department will implement and maintain strong control over the programme using an Earned Value Management (EVM) system, complemented with robust Governance and Assurance processes; and
- Contractual Terms and Conditions: the Department will ensure that Value for Money principles are better reflected in all contracts and that there is provision for the on-going evidencing of VfM through-life.

12. The Department has committed to providing an annual cost report to Parliament, which will contain a cost comparison between the programme and the initial estimates contained in the White Paper, and will draw on the analysis within the Value Book. The first report will be presented to Parliament by the end of the year.

[10] Should Cost Modelling, Benchmarking, Risk, Commercial Data, Post Costing & Robust Audit, Rationalisation, Asset Rationalisation, Portfolio Analysis, Core Programme, Terms & Conditions, Cost Allocations, Commercial Constructs, Long Term Partnering Agreements, Incentivisation, Through Life Capability Management

PAC Conclusion (4): The United Kingdom's new submarine will incorporate an American-supplied missile compartment. As the current Vanguard fleet will go out of service in the 2020s, the United Kingdom's programme is running ahead of the United States' programme. The United Kingdom will therefore have to make key design decisions on a replacement submarine before the United States. Given the unavoidable dependence on the American programme, the Department should analyse the lessons from other projects where the Department has been dependent on the United States for critical elements of technology. The Department should use this analysis to inform the development of its proposed communications plan.

13. The Department agrees that the UK will have to take decisions on submarine design in advance of the US and that relevant lessons from other projects involving critical elements of technology supplied by the US should be incorporated in the programme. Discussions have been held with the Joint Combat Aircraft team to identify whether relevant lessons exist and the Strategic Weapons team, which has close liaison with US staff, is located within the same cluster as the Deterrent team facilitating knowledge transfer. Key project staff regularly attend learning from experience events within the Department.

14. Clear communication with the US will be critical to managing this risk, however the UK has a long history of effective cooperation with the US on deterrent matters, underpinned by key treaties (the 1958 UK/US Mutual Defence Agreement, and the 1963 Polaris Sales Agreement as modified in 1982 for Trident).

PAC Conclusion (5): Given the lack of time contingency for the submarine construction programme, some overlap between the design and production phases of the programme is likely to be necessary. The Senior Responsible Owner needs to set out how he will trade between the risks and opportunities involved in managing overlaps, and agree an explicit change management mechanism with other departmental teams and commercial partners at the outset of the project to deal with emerging difficulties in a timely manner.

15. The Department agrees that there must be an explicit change management mechanism. Overlapping design and production phases is not something, which is unique to the future submarine programme – it is a characteristic of most complex engineering programmes in defence or elsewhere. Whilst non-overlapping programmes reduce certain risks by requiring that designs are fully mature before manufacture commences, longer timescales also increase the risk of obsolescence. Modern engineering design and manufacture tools (including the use of three dimensional modelling and simulation) and programme management methods enable the risk of overlapping project phases to be effectively managed.

16. The Department has taken account of overlapping phases in developing its procurement, commercial and approval strategies and these will ensure that effective governance is exercised at key programme decision points.

17. In accordance with programme management best practice, the Department will have a clear change management process within the design team to ensure that changes to specifications are managed carefully. This process, which will be managed jointly with the Department's commercial partners, will operate across the engineering disciplines/functions and will ensure that the cost, time and performance impact of all significant changes is understood before the change is approved by the appropriate authority.

PAC Conclusion (6): The programme's Senior Responsible Owner role still does not conform to Office of Government Commerce guidance. The Department should review what prevents it moving to an arrangement, which conforms more closely to Office of Government Commerce guidance and set out ways to redress the current shortfall as part of its Initial Gate submission.

PAC Conclusion (7): The Senior Responsible Owner does not have direct line management responsibility for some Programme Board members and must therefore work in part by influence and consensus. The Department is confident that it can align incentives and reward good behaviour when individual Programme Board members have conflicting priorities. However, it did not explain persuasively how it would achieve this goal and should clearly set out how this can be done.

18. The Department believes that the current governance structures are robust enough to ensure the effective delivery of this programme. The Senior Responsible Owner (SRO) is well resourced to fulfil his duties, is able to discharge all of the responsibilities of an SRO described by the OGC and all key stakeholders are represented on the Future Strategic Deterrent Management Board. Establishing an SRO who had line management responsibility for all those involved in the programme (which include representatives from other departments) would not be practical given the range of stakeholders involved in this programme. However, the SRO does have direct access to the Permanent Secretary to escalate issues should that be necessary.

19. The Deterrent programme was subject to an OGC-led independent Gateway Review in July 2007. The Review made no recommendations on the SRO arrangements then in place, and noted that the arrangements being considered for the future, which included the occupant of the Director General Equipment (now renamed as Director Equipment Resources) acting as SRO were 'credible' and within the 'latitude' available for reconfiguring the SRO role. Nonetheless, the Department recognises that there is an issue of balance around the current arrangements, which may change as the programme progresses, and will continue to keep these arrangements under review to ensure that they remain appropriate in line with current and emerging OGC guidance.

20. In addition, the authority of the Deterrent SRO is likely to be reinforced by work currently underway under the direction of the Second Permanent Secretary aimed at clarifying and supporting the responsibilities and authority of SROs within the Department, in line with OGC guidance and best practice.