



National Audit Office

MINISTRY OF DEFENCE
The United Kingdom's Future Nuclear
Deterrent Capability

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SUMMARY

1 This report takes an initial look at the Ministry of Defence's (the Department's) programme for implementing the Government's decision to maintain the United Kingdom's nuclear deterrent capability beyond the life of the current Trident system. The programme is at an early stage with the Department currently engaged in a two-year concept phase, focused on the new class of submarine, which is due to finish in September 2009. This phase will establish the principal design parameters of the submarines and consider how to deliver other aspects such as manning, training and infrastructure. Other work is focused on assembling the information necessary to inform decisions on whether and how it may be necessary to refurbish or replace the current nuclear warhead that are expected to be necessary in the next Parliament. Our report therefore focuses on the major risks to delivery as they currently stand, and the actions that the Department is taking to manage those risks.

2 The United Kingdom deployed its first submarine-launched nuclear deterrent in 1968, known as Polaris, with the commissioning of the Resolution class submarine fleet. Polaris stayed in service until the mid-1990s, when it was replaced by the Trident system, deployed on Vanguard class submarines, the first of which came into service in 1994. Since the introduction of Polaris, 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 time. Continuous at sea deterrence is a clear and demanding operational requirement which has been met since 1968.

3 The nuclear deterrent currently comprises four principal elements: a fleet of four Vanguard-class submarines; access to a pool of Trident D5 missiles, shared with the United States; a stockpile of nuclear warheads; and a range of support infrastructure.

In 2006, the Government announced its intention to maintain the UK's nuclear deterrent capability, focussed primarily on the acquisition of a new class of submarines. The Government also set out its plans to participate in the United States of America's programme to extend the life of the Trident D5 missile and to make a decision in due course about whether and how it may be necessary to refurbish or replace the current nuclear warhead.

Main findings

4 Our main findings are as follows:

5 There is a challenging timetable to meet if continuous at sea deterrence is to be maintained. The critical path for provision of a future deterrent capability is the delivery of the nuclear-powered submarine platform in time to meet an in-service date of 2024. But there are also possible time constraints from other areas of the programme. There is currently little scope for incorporating time contingency in the overall programme to deal with slippage in any of these areas. The Department is currently examining how it might mitigate this risk.

6 The current two-year concept phase involves a range of important and difficult decisions which must be taken in a timely manner in order to keep the programme on track. The technical complexity and the involvement of a wide range of partners, including other government departments and the United States of America, makes developing the design specification for the future submarine a challenging task. There are still major decisions to be made if this work is to be completed on time by the formal end of the concept phase in September 2009.

7 The Department has developed management and decision-making arrangements during the concept phase, but recognises that these arrangements will need to be strengthened as the programme develops. Our work has identified challenges which need to be addressed in the short term, such as the overall coordination of the programme. The Department is developing work schedules, progress monitoring and risk management arrangements, but these are not mature yet.

8 The Department has made good progress in identifying, engaging and communicating with important partners including other government departments and industry. Whilst communications across the programme are generally good, further opportunities exist, such as secure video conferencing with the United States and improved IT infrastructure, which would increase working efficiency.

9 The Government's White Paper predicted an acquisition cost for the new system of £15-20 billion in 2006-07 prices. The White Paper also concluded that the operating costs would be similar to the current deterrent at between 5 and 6 per cent of the annual defence budget, but did not quantify those costs. The Department is improving the White Paper cost estimates but they are not yet sufficiently robust to support the future deterrent programme throughout its planned life. There remain a number of major areas of uncertainty in the budget, including the provision for contingency, inflation and Value Added Tax. Budgetary control arrangements are still being developed and there are some areas of potential risk which need to be addressed.

10 The 2005 Defence Industrial Strategy sets out the Government's intention that Royal Navy submarines will be built in the United Kingdom. Suppliers to the submarine industry constitute a highly specialised industrial sector with a number of monopoly suppliers. There are difficulties inherent in providing the right incentives for monopoly suppliers to deliver to time and budget. Currently, there is no single document which sets out convincing evidence of how the Department intends to assure value for money from its suppliers throughout the life of the programme. The Department is aware of this and will include criteria for assessing value for money in the procurement strategy it has under preparation.

11 Both the Department and its industrial suppliers have identified skills shortages and are considering how to address them. These shortages relate to submarine building expertise within the industrial supply chain and financial, commercial, programme management and nuclear-related expertise within the Department.

Overall Conclusion

12 The programme to maintain the UK's nuclear deterrent capability is at an early stage. It is therefore not surprising that some critical arrangements and decisions required to deliver the future deterrent are still being developed. For example, there are considerable challenges in ensuring that the Department's suppliers perform effectively and that the new submarines are delivered on time and at an acceptable cost. The Department has, however, made good progress in establishing programme management arrangements, coordinating all aspects of the future deterrent capability and engaging industry and other government departments. The risks identified in this report will need to be managed carefully if value for money is to be achieved over the life of this programme.

Recommendations

13 **Box 1** sets out the principal areas of risk that need to be managed to ensure the successful delivery of the future deterrent on time and on budget. These risks are interdependent but each alone has the potential to undermine the Department's ability to deliver continuous at sea deterrence in the future. The Department is aware of these risks and is monitoring them through its newly established Programme Support Office, reporting to the Senior Responsible Owner.

14 Within those five areas of risk, we have identified a number of elements of the programme which require particular attention in the short term.

- a** The successful delivery of the future deterrent capability will require co-ordinated and timely action from a range of senior decision-makers across government, internationally and in industry. The inherent complexity of the delivery arrangements increases the risk of poor or cumbersome decision-making. The Department faces a challenge in ensuring that the leadership arrangements are fit for purpose as the programme evolves. **The Department should:**

BOX 1

Principal areas of risk which need to be managed

- 1 Meeting a challenging timetable.
- 2 Making decisions about the design on time.
- 3 Ensuring effective governance arrangements.
- 4 Developing a robust budget and exerting financial control.
- 5 Applying effective procurement practices.

- i** Establish and communicate to decision-makers within the Department, across government and in industry a clear timetable for decisions with the specific deliverables required to achieve them clearly identified and agreed with those responsible.
- ii** Take stock after Initial Gate, and certainly by Main Gate, on the evolution of the Senior Responsible Owner role and supporting structures, ensuring that the experience, seniority and time commitment required of the individual or individuals charged with coordinating decision-making and providing overall direction for the programme, which will change as the programme matures, are taken into account.
- iii** Encourage decision-makers to work in a collegiate manner by more closely aligning incentives to improve joint working and identifying and rewarding behaviours which will underpin this.

- b** The Department needs to create a single, consistent and accurate dataset for the programme to ensure that decision-makers have the relevant information required when making decisions and to provide clear data for oversight of the programme. **It should put in place, by no later than the end of the concept phase, a single set of performance indicators demonstrating progress on key time, cost, performance and risk metrics across the programme. These indicators should be managed by the Programme Support Office on behalf of Director Strategic Requirement and the Senior Responsible Owner.**

- c** There is a need, recognised by the Department, to refine and update the initial estimates of the costs of the programme set out in the White Paper and, in particular, to produce robust estimates of whole-life costs. In undertaking this work, there is a balance to be struck between producing whole-life cost estimates with sufficient detail to support key decisions and introducing spurious accuracy before many technical aspects of the programme are understood. **By September 2009 the Department should have more robust cost estimates that make provision for the areas of uncertainty raised in this report, as well as developing fuller cost estimates for other areas such as infrastructure and training. Within that revised cost estimate and given the uncertainties involved, the Department will need to decide what period its provision for elements such as contingency and inflation will cover.**

- d** To ensure effective oversight of in-year expenditure on the programme, it is essential that the programme team supporting the Senior Responsible Owner have detailed visibility of the budget once it is distributed through the integrated project teams responsible for delivery. **The Department should mandate that the Programme Support Office, on behalf of Director Strategic Requirement and the Senior Responsible Owner, has access to each integrated project team's financial management information and that information is held in a common form, with common assumptions.**
- e** Critical to the successful maintenance of continuous at sea deterrence is establishing with greater certainty how far the life of the current Vanguard class of submarines can be safely extended. **While the assessment of risk will continue until the Vanguard class goes out of service, the various parts of the Department involved need to provide the Programme Board with a thorough analysis by September 2009 to show what the full implications of this work are. Those teams should agree dates for critical decisions, as well as responsibilities for work required to meet those dates.**
- f** Making certain that its suppliers deliver on time and at an acceptable cost is a major challenge for the Department, which requires a comprehensive strategy to bring together all elements of the programme. **The Department should implement the lessons it has learnt from similar projects and previous NAO guidance, and work with industry to develop a commercial strategy which provides a clear picture of how it will incentivise performance in the context of its overall relationship with the suppliers concerned.**
- g** A range of government departments are involved in nuclear-related policy-making, regulation and oversight across the civilian and military sectors. This work requires a range of specific skills. The Department and its industrial partners are facing some skills gaps, including programme management, submarine construction expertise and nuclear-related experience. Although the Department is introducing some sensible short-term measures to alleviate those gaps, it needs to pursue urgently measures to resolve these problems in the long term if it is to mitigate the risks facing the programme throughout its life. **By September 2009 and working in conjunction with key industrial suppliers, the Department should produce a report analysing the lessons learned from practices adopted to date, identifying specific skills gaps and setting out a long-term strategy to fill those gaps. As part of this analysis the Department should continue to engage with other government departments involved in the civil nuclear field to maximise the United Kingdom's skills base as a whole.**