



House of Commons  
Defence Committee

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# Future Carrier and Joint Combat Aircraft Programmes

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**Second Report of Session 2005–06**

*Report, together with formal minutes, oral and  
written evidence*

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### Committee staff

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### Contacts

All correspondence should be addressed to the Clerk of the Defence Committee, House of Commons, London SW1A 0AA. The telephone number for general enquiries is 020 7219 5745; the Committee's email address is [defcom@parliament.uk](mailto:defcom@parliament.uk). Media inquiries should be addressed to Jessica Bridges-Palmer on 020 7219 0724.

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## Summary

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The Ministry of Defence plans to replace the Royal Navy's current strength of three aircraft carriers with two larger, more versatile carriers capable of carrying a more powerful force, including new carrier borne aircraft to replace the Harrier. This report analyses the progress of the Future Carrier and related Joint Combat Aircraft programmes.

On the Future Carrier programme, there is a serious risk that the two carriers will not enter service in 2012 and 2015 as originally planned. The main investment decision (Main Gate), which precedes the Demonstration and Manufacture phases, was originally planned to be taken in December 2003, but there is now no target date for this decision, although it is possible that an intermediate decision may be imminent that will serve as a partial Main Gate. Further delays are likely to impact upon the original In-Service Dates for the new carriers.

Procurement of the aircraft carriers is being undertaken under a novel 'Alliance' approach consisting of MoD and three commercial companies. This approach was announced almost three years ago, but some fundamental issues still remain to be resolved before the Alliance Agreement can be finalised.

The optimum shipbuild strategy for the carriers has yet to be decided. Delays to the letting of construction contracts for the two carriers are already impacting upon UK shipyards: this is threatening jobs and the survival of some UK shipyards. If work on the carriers is significantly delayed, it will coincide with a number of other naval shipbuilding programmes, putting pressure on the UK's naval shipbuilding capacity and perhaps forcing work abroad. We will need to know that the Ministry of Defence has addressed capacity issues in its Defence Industrial Strategy, which we have not seen when finalising this report.

On the Joint Combat Aircraft programme, the Joint Strike Fighter, a US-led programme, has been selected as the aircraft to operate from the new carriers. Weight problems on the variant of the Joint Strike Fighter which the UK is procuring have been mitigated, but risks remain and must be monitored closely.

The target In-Service Date for the Joint Strike Fighter was 2012 to coincide with the entry into service of the first new carrier. This has now been revised to 2014. If the first new carrier enters service in 2012, there is a risk that the Royal Navy will have a new carrier but no new aircraft to operate from it.

It is vital that the UK gets all the information and access to technology it requires from the US to have 'Sovereign Capability'—the ability to maintain the Joint Strike Fighter aircraft and undertake future upgrades independently. The UK must receive adequate assurances that it will get all the information and access to technology it requires before the programme is too far advanced. If these assurances are not given, it is questionable whether the UK should continue its involvement in the programme.

Key issues remain to be resolved on both programmes. Delays to one or both programmes could result in a capability gap for the Royal Navy. In order to bridge the gap, it is likely that the lives of the current carriers and carrier aircraft will need to be extended. For this reason, decisions on the programme are needed as soon as possible.

# 1 Introduction

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## The requirement

1. The requirement for two new aircraft carriers and aircraft to operate from them was set out in the Strategic Defence Review of 1998:<sup>1</sup>

The focus for our maritime forces in the new environment will move towards rapid deployment operations. Our amphibious capability with its improved specialised shipping will give our Rapid Reaction Forces important extra flexibility. Aircraft carriers will have a wide utility, including for deterrence and coercion. Our current INVINCIBLE class carriers will be given a wider power projection role by the development of a "Joint Force 2000" combining RN and RAF Harrier aircraft. To meet our longer term needs, we plan to replace our current carriers from around 2012 by two larger, more versatile, carriers capable of carrying a more powerful force, including a future carrier borne aircraft to replace the Harrier. These plans will now be developed in detail in the normal way.<sup>2</sup>

2. The two new aircraft carriers and the aircraft to operate from them are core elements of the 'Carrier Strike' capability. Carrier Strike is an 'expeditionary air power capability that will be able to operate in uncertain access, basing and overflight conditions as part of a joint force: the fast jet element should be capable of delivering the full range of effects from both the land and sea base'.<sup>3</sup> At the core of the Carrier Strike capability are the Future Aircraft Carriers (CVF), the Joint Combat Aircraft (JCA) and the Maritime Airborne Surveillance and Control (MASC) projects.<sup>4</sup> The United Kingdom (UK) Ministry of Defence (MoD) has selected the Short Take Off and Vertical Landing (STOVL) variant of the Joint Strike Fighter (JSF) to meet the JCA requirement. JSF is a US-led programme.<sup>5</sup> The current estimate of whole life costs<sup>6</sup> for the core projects of the Carrier Strike capability is £31 billion, which includes some £12 billion of acquisition costs.<sup>7</sup>

3. The Defence Committee in the last Parliament examined the progress in acquiring the two new aircraft carriers and the Joint Strike Fighter, in its *Defence Procurement* reports of 2003<sup>8</sup> and 2004<sup>9</sup>, and its 2005 report<sup>10</sup> into the White Paper, *Delivering Security in a Changing World: Future Capabilities*.

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1 White Paper on the Strategic Defence Review, *Modern Forces for a Modern World*, Cm 3999

2 Cm 3999, para 115

3 Ev 44

4 *Ibid*

5 Ev 40

6 MoD's Smart Acquisition initiative 'includes the need to examine critically and manage the whole life costs of delivering military capability. In order to ensure that investment decisions take full account of the cost of owning as well as procuring equipment, a better understanding of the costs associated with operating, maintaining and disposal of the equipment is essential' (The Acquisition Handbook, Edition 6—October 2005, p 13).

7 Ev 45

8 Defence Committee, Eighth Report of Session 2002–03, *Defence Procurement*, HC 694, paras 71–84

9 Defence Committee, Sixth Report of Session 2003–04, *Defence Procurement*, HC 572-I, paras 78–82

10 Defence Committee, Fourth Report of Session 2004–05, *Future Capabilities*, HC 45-I, paras 49–56 and paras 124–130

## Scope of our inquiry

4. The focus of our inquiry was on the progress in procuring two of the three core projects of the Carrier Strike capability—the CVF and JCA programmes. Both programmes have experienced problems and our examination focussed on how these problems were being addressed, and the progress against cost, time and performance targets. We did not examine manpower issues on either programme as the In-Service Dates are still some way off; but we intend to monitor this closely.

## Maritime Airborne Surveillance and Control Programme

5. The MASC programme, the third of the three core projects aims to provide ‘assured airborne surveillance and control through the surveillance of air and surface targets and the battle management of air borne assets’.<sup>11</sup> This broad capability is currently provided by the Sea King Mk7 Airborne Surveillance and Control variant.<sup>12</sup>

6. The MASC programme has received Initial Gate approval<sup>13</sup> and moved into the Assessment Phase in July 2005. The MASC Assessment Phase will examine the options for providing the solution to the MASC capability requirement.<sup>14</sup> MoD is aiming for Main Gate approval<sup>15</sup> towards the end of the decade. The In-Service Date (ISD) for MASC will be decided by Main Gate, but is likely to be after the introduction into service of the two aircraft carriers and the JSF aircraft. The current Sea King Mk7 Airborne Surveillance and Control variant will provide the initial airborne surveillance and control capability for the Carrier Strike capability.<sup>16</sup> Given that the MASC programme is at an early stage, we did not examine the progress of this programme in detail. MoD will need to ensure that the MASC programme is not subject to delays or indeed cancellation, so that the best use is made of the two new aircraft carriers and JSF aircraft.

7. Other ‘enabling capabilities’,<sup>17</sup> including the Military Afloat Reach and Sustainability (MARS)<sup>18</sup> and Future Strategic Tanker Aircraft (FSTA)<sup>19</sup> programmes, will contribute to the effectiveness of the Carrier Strike capability. However, these programme are not core projects and we did not examine their progress as part of this inquiry. Given their importance, we intend to monitor closely the progress on both these programmes.

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11 Ev 43

12 *Ibid*

13 Under the Smart Acquisition lifecycle, there are two key approval points, Initial Gate, at which parameters for the Assessment Phase are set, and Main Gate, at which performance, time and cost targets for the Demonstration and Manufacture Phase are set.

14 Ev 43

15 *Ibid*

16 Ev 2, paras 9–10

17 Ev 44

18 MARS is planned to provide a fleet of ships which will deliver logistics support to maritime, amphibious and land based forces engaged in expeditionary activity. The requirement reflects the changing strategic role of the future navy (including Carrier Strike) and is intended to reduce United Kingdom Forces’ reliance on logistic and infrastructure support from other nations within the theatre of operations.

19 FSTA is planned to replace the air refuelling and some elements of air transport capability currently provided by the RAF’s fleet of VC10 and TriStar aircraft. Air refuelling is a key military capability that provides force multiplication and operational range enhancements for front line aircraft across a range of defence roles and military tasks.

## Timing of the inquiry

8. We announced our inquiry into the CVF and JCA programmes on 21 July 2005.<sup>20</sup> On 20 September 2005, Lord Drayson, Minister for Defence Procurement, wrote to our Chairman expressing concerns about the timing of the inquiry.<sup>21</sup> A particular concern was that ‘negotiations on the carrier programme in particular may be at a critical stage as we approach the major investment decision (Main Gate) on the programme’.<sup>22</sup> The Minister said that he would prefer us to amend the timing of our inquiry, but if that was not possible, noted that MoD ‘will be forced to be limited in the information that it will be able to provide to the Committee’.<sup>23</sup> We recognised that there would always be some difficulties with the timing of inquiries into procurement programmes. However, these were two key programmes which our predecessors had followed closely. Given the importance of these programmes, we decided to undertake the inquiry to our original timetable rather than defer it.<sup>24</sup>

## Oral and written evidence

9. In undertaking our inquiry, we took oral evidence on 18 October 2005 from representatives of the main defence companies involved in the CVF programme (Mr Allan Cameron, Managing Director, Thales Naval Business, UK; Mr Chris Geoghegan, Chief Operating Officer, BAE Systems; and Mr Tony Pryor CBE, Chairman of Devonport Royal Dockyard Limited and Kellogg, Brown and Root representative on the UK Aircraft Carrier Alliance project) and JCA programme (Mr Tom Burbage, Executive Vice President and General Manager, F-35 JSF Program, Lockheed Martin; and Mr Steve Mogford, Chief Operating Officer, BAE Systems). We also took oral evidence on 25 October 2005 from Lord Drayson, Minister for Defence Procurement and Sir Peter Spencer, Chief of Defence Procurement, and on 18 October 2005 from Mr John Coles, the CVF and MASC Integrated Project Team Leader<sup>25</sup> and Commodore Simon Henley, JCA Integrated Project Team Leader.

10. In addition to written evidence from MoD, we received written evidence from Scottish Enterprise Glasgow<sup>26</sup> and the ‘Keep Our Future Afloat Campaign’.<sup>27</sup> We are grateful to all those who contributed to our inquiry, and to the specialist advisers who assisted us in our inquiry: Mr Paul Beaver, Rear Admiral Richard Cobbold, Professor David Kirkpatrick, Air Vice Marshal Professor Tony Mason and Brigadier Austin Thorp.

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20 Defence Committee, Press Notice No. 2 of Session 2005–06

21 Ev 40

22 *Ibid*

23 *Ibid*

24 Ev 5

25 The Smart Acquisition initiative is built on the integration of relationships between customers and suppliers. Characteristics of a Smart Acquisition approach are clearly identified customers and the formulation of Integrated Project Teams (IPTs) to supply the requirement (The Acquisition Handbook, Edition 6—October 2005, p 22).

26 Ev 50–52

27 Ev 52–57

## 2 Future Carrier Programme

### Background

11. The Future Carrier (CVF) programme is a UK programme which MoD is seeking to run under an 'Alliance' approach. The MoD as the customer for the two aircraft carriers is also a member of the Alliance. France also has a requirement for a new aircraft carrier in a similar timescale to the UK. We examined the possibility of France's participation in the CVF programme as part of our inquiry.<sup>28</sup>

12. The CVF programme is being procured under the Smart Acquisition<sup>29</sup> initiative. A list of key events to date in the procurement of the CVF programme is shown at Table 1.

**Table 1: Key events to date on the CVF programme**

Date	Key Event
December 1998	CVF programme received Initial Gate approval
January 1999	Invitations to Tender were issued for the Assessment Phase. <sup>30</sup>
November 1999	Contracts for the Assessment Phase were awarded to BAE Systems and Thales UK
June 2001	Completion of Stage 1 of the Assessment Phase
November 2002	Completion of Stage 2 of the Assessment Phase (which had been revised and shortened)
January 2003	Announcement that an Alliance approach involving BAE Systems, Thales UK and MoD represented the best approach to the CVF programme.
March 2004	Completion of Stage 3 of the Assessment Phase
July 2004	Assessment Phase extended into Stage 4 to further mature the design and carry out risk reduction work
February 2005	Selection of Kellogg, Brown and Root (KBR) UK Ltd as the Physical Integrator and additional participant in the Alliance

Source: National Audit Office<sup>31</sup>

28 See paras 74–80 below

29 The Smart Acquisition cycle covers the following phases: Concept; Assessment; Demonstration and Manufacture; In-Service; and Disposal. There are two key approval points – Initial Gate at which parameters for the Assessment phase are set, and Main Gate, at which performance, time and cost targets for the Demonstration and Manufacture phase are set.

30 Initially the Assessment Phase was broken down into two stages

31 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-II, Session 2005–2006, pp 129–130

## Forecast costs

13. The procurement cost of the CVF programme is expected to be in excess of £3 billion. The National Audit Office's (NAO) *Major Projects Report 2005*, published on 25 November 2005, states that the forecast cost of the Assessment Phase is £300 million (the Approved Cost at Initial Gate of the Assessment Phase was £118 million), and the 'most likely' forecast cost of the Demonstration and Manufacture Phase at Initial Gate was £2,877 million.<sup>32</sup> No details are shown for the 'most likely' current forecast cost of the Demonstration and Manufacture Phase as the information is classified as 'commercially sensitive'.

14. The procurement costs of the core projects of the Carrier Strike capability are some £12 billion.<sup>33</sup> We asked how much of the procurement cost of £12 billion related to the two future carriers. Mr Coles, the CVF and MASC Integrated Project Team Leader, told us that 'it is about a quarter'.<sup>34</sup> This would equate to some £3 billion, although the previous Committee noted in its 2004 *Defence Procurement* report that press reports had suggested that the expected costs of the two carriers could be nearer to £4 billion.<sup>35</sup>

## Forecast In-Service Dates

15. MoD's written evidence notes that 'the target ISDs for the two future aircraft carriers remain unchanged at 2012 and 2015'.<sup>36</sup> The NAO's *Major Projects Report 2005* states that the 'most likely' forecast ISD at Initial Gate was August 2012.<sup>37</sup> No details are shown for the 'most likely' current forecast ISD as the information is classified as 'commercially sensitive'.

## Assessment Phase and Main Gate approval

16. The Assessment Phase is defined as 'the second phase in the acquisition cycle after the Concept Phase and beginning with Initial Gate. The aim of the Assessment Phase is to develop an understanding of options for meeting the requirement that is sufficiently mature to enable selection of a preferred solution and identification, quantification and mitigation of the risk associated with that solution. At the end of the Assessment Phase a Business Case is submitted to the Investment Approvals Board for Main Gate Approval'.<sup>38</sup>

17. Main Gate is defined as 'the approval point between the Assessment Phase and the Demonstration and Manufacture Phases. At Main Gate, a Business Case is presented, which should recommend a single technical and procurement option. By Main Gate, risk should have been reduced to the extent that the Customer and the IPT [Integrated Project

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32 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-II, Session 2005–2006, p 130

33 Ev 45

34 Q 102

35 Defence Committee, Sixth Report of Session 2003–04, *Defence Procurement*, HC 572-I, para 76

36 Ev 43

37 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-II, Session 2005–2006, p 130

38 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-I, Session 2005–2006, p 41

Team] can, with a high degree of confidence, undertake to deliver the project to narrowly defined time, cost (procurement and whole-life) and performance parameters'.<sup>39</sup>

18. Following Main Gate are the third and fourth phases in the acquisition cycle—the Demonstration and Manufacture phases. During these phases 'development risk is progressively eliminated, the ability to produce integrated capability is demonstrated and the solution to the military requirement is delivered within time and cost limits appropriate at this stage'.<sup>40</sup>

19. The CVF programme is currently in the Assessment Phase of the Smart Acquisition lifecycle. We were keen to examine how the Assessment Phase on the CVF programme was progressing and the implications for the Main Gate approval date. The original target date for Main Gate approval for the CVF programme was December 2003.<sup>41</sup> However, the date for Main Gate approval and the subsequent placing of a Demonstration and Manufacture contract has been progressively delayed. The previous Committee was told:

- in May 2003, that the Main Gate approval was expected in February 2004 and the award of the Demonstration and Manufacture contract in 'early 2004'.<sup>42</sup>
- in October 2003, that 'the current intention remains to place a Demonstration and Manufacture contract in Spring 2004'.<sup>43</sup>
- in February 2005, that the main investment decision [Main Gate] 'is anticipated to take place in the latter half of 2005'.<sup>44</sup>

20. At the oral evidence session on 18 October 2005, Mr Coles told us that there was now no official target date for the main investment decision and that 'the main investment decision I doubt very much will be taken in 2005'.<sup>45</sup> We asked Lord Drayson, Minister for Defence Procurement, what target date for a Main Gate decision MoD was working to. The Minister told us that:

It is so important that when we pass the Main Gate investment decision we have got clarity over the timescale and costs and risks.<sup>46</sup>

My view is that the ideal would be for this Main Gate decision to be taken as soon as possible, subject to it meeting the criteria which I have described. I do not want to see the Main Gate decision taken before we have the answers to these questions to a level

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39 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-I, Session 2005–2006, p 43

40 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-I, Session 2005–2006, p 42

41 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-II, Session 2005–2006, p 130

42 Defence Committee, Eighth Report of Session 2002–03, *Defence Procurement*, HC 694, Ev 69

43 Defence Committee, Fourth Special Report of Session 2002–03, *Defence Procurement: Government's Response to the Committee's Eighth Report of Session 2002–03*, HC 1194, para 27.

44 Defence Committee, Fourth Report of Session 2004–05, *Future Capabilities*, HC 45-II, Ev 179

45 Qq 84–85

46 Q 146

of confidence which means that the answers to questions on cost and time and risk are really understood.<sup>47</sup>

21. In early October 2005, some press reports suggested that MoD hoped to achieve Main Gate approval in the first quarter of 2006.<sup>48</sup> In mid-November 2005, some press reports suggested that the production contract for the CVF might be delayed until 2007 as consideration was being given to a two-stage Main Gate phase—allowing a Demonstration contract to be awarded first and a Manufacture contract awarded second.<sup>49</sup> It seems possible that an intermediate decision may be imminent that will serve as a partial Main Gate.

**22. Given that the original target date for Main Gate approval on the CVF programme was two years ago, it seems to us extraordinary that there is now no target date at all. MoD should have a target date, even while accepting that it may not be achieved because work to clarify programme timescale, costs and risks is still being undertaken.**

23. A key aim of the Assessment Phase is to mature the design and carry out risk reduction work to ensure that the best technical and procurement solution is achieved. The previous Committee gave its support to MoD's approach to de-risking the CVF programme: 'we consider it vitally important that defence equipment programmes, particularly of the scale of the Future Carrier programme, are properly de-risked and we support the sensible decision to continue with the Assessment Phase of this programme'.<sup>50</sup>

24. The First Sea Lord told the previous Committee in November 2004 that 'we have 60 per cent design definition now, which is higher than any other project'.<sup>51</sup> In October 2005, Mr Coles told us that:

The definition of design maturity used, and to which the First Sea Lord may be referring, is the definition about the ability to enter into what we call production engineering. It is not the design being complete.... If it was 60 per cent then, my judgment is it is not a great deal further on.... It is not a linear thing. In other words, you do not make six months' progress and you are five per cent on. It can take a long time to go from 60 to 70 to 80.<sup>52</sup>

**25. It is disappointing that design definition work on the CVF programme has not progressed much in the last year, even though it is a key objective of the Assessment Phase.**

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47 Q 147

48 *Four shipyards to share £4bn carriers contract*, Sunday Times, 2 October 2005

49 *UK Carrier Decision May Come in 2 Parts*, Defence News, 14 November 2005

50 Defence Committee, Eighth Report of Session 2002–03, *Defence Procurement*, HC 694, para 80

51 Defence Committee, Fourth Report of Session 2004–05, *Future Capabilities*, HC 45-II, Q 534

52 Q 86

## Reducing costs on the CVF programme

26. MoD's submission states the Demonstration and Manufacture phases of the CVF 'will not be bounded until Main Gate. At that point the boundaries of the costs will be established at "Lowest, Most Likely and Maximum"'.<sup>53</sup>

27. The Alliance undertook a 100-day review which concluded that the CVF programme was still financially viable.<sup>54</sup> Mr Coles told us that:

What the 100-day programme did was it looked at what industry and ourselves thought this project should cost, and the outcome of that was that although we have yet to tease out the final costs, it can be made compatible with the funding that is available for this project. In other words, we think that the cost that we have in the assessment phase today, what we think this may cost, with some changes we would drive in through the Alliance arrangements can be brought in line with the available funding.<sup>55</sup>

28. Mr Coles also told us that one of the roles of the Physical Integrator was 'on behalf of the Alliance to police precisely prices and the programme to make sure that it is all viable'.<sup>56</sup>

29. Because of the complex nature of the CVF programme, MoD wanted an independent, objective analysis that evaluated the economic implications, schedule impact, and technical risk of adopting new technologies and alternative manufacturing options. MoD commissioned the RAND Corporation to undertake this research, the outcome of which was published in a 2005 report '*Options for Reducing Costs in the United Kingdom's Future Aircraft Carrier (CVF) Programme*'. The RAND report examined both procurement and construction costs, and in-service costs.

30. The RAND report identified a number of options which might lead to lower CVF construction costs including: using more advanced outfitting, especially for electrical, piping, and HVAC (heating, ventilation, and air conditioning), than is currently used by most UK shipbuilders; setting the start of the second ship to minimise total labour costs at the shipyards constructing the large blocks; centralising the procurement of material and equipment.; considering the use of commercial systems and equipment in place of military standard equipment wherever there is no adverse impact on operations or safety; and minimising changes during ship construction and quickly resolving any that must be made.

31. MoD assured us that it was 'alert'<sup>57</sup> to the opportunities identified in the RAND report to lower construction costs and 'to a significant extent the cost reducing options identified in the RAND report are being implemented'.<sup>58</sup>

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53 Ev 42

54 *Ibid*

55 Q 104

56 Q 55

57 Ev 46

58 *Ibid*

32. The RAND report also identified Whole Life Cost (WLC) reduction and reducing manpower requirements as the two main areas where support costs could be reduced on the CVF. MoD told us that ‘a detailed WLC model has been constructed.... This model has identified the main in-service cost drivers for the CVF and is being used to focus design effort. The cost model.... is assisting the MoD to assess the long-term affordability of the CVF and Carrier Strike capability’.<sup>59</sup> The CVF WLC model confirms that ‘manpower at approximately half of the total in-service costs remains the most significant area of opportunity for cost reduction’.<sup>60</sup> The RAND report identified a number of initiatives to reduce the manpower complement. MoD told us that these initiatives ‘have been reviewed by the Aircraft Carrier Alliance.... the majority of these align with design and operating principles that either have been adopted or are being considered for CVF’.<sup>61</sup>

33. The second highest in-service cost driver will be the maintenance of the two aircraft carriers. In order to minimise costs, work has commenced on ‘reducing the number and complexity of systems and selecting equipments with lower maintenance requirements’.<sup>62</sup> MoD told us that ‘current predictions indicate that the total CVF class maintenance costs could be as low as those of the CVS class [the current class of aircraft carriers] despite the total tonnage of the class being nearly double’.<sup>63</sup> We would have expected the maintenance costs of the Future Carriers to be lower than the current class of aircraft carriers as the three current aircraft carriers inherently require more maintenance than the two future carriers. In addition, we would expect new systems to be designed to require less maintenance than older systems.

34. The RAND report concluded that MoD could not have a Contractor Logistics Support arrangement in which the contractor is responsible for every aspect of making a carrier available and is paid solely for available vessel days. MoD support the conclusions in the RAND report about Contractor Logistics Support and envisage that the support solution ‘will be of a “mixed economy” nature, where responsibility for support and delivering availability is shared between various industry support providers and the MoD’.<sup>64</sup>

**35. We welcome MoD’s decision to commission an independent analysis by the RAND Corporation to identify options for reducing costs on the CVF programme. We acknowledge that the cost reduction options have been considered and are mostly being implemented. The CVF programme is likely to be very costly, both in terms of procurement and construction costs, and through-life costs. It is essential that MoD and the other Alliance partners continue to identify ways to drive down costs. If costs are not constrained, there is a very real risk that the CVF programme could become unaffordable.**

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59 Ev 47

60 *Ibid*

61 *Ibid*

62 *Ibid*

63 *Ibid*

64 Ev 7

## Possible Slippage of the In-Service Date

36. The First Sea Lord, Admiral Sir Alan West, told the previous Defence Committee on 24 November 2004 that, in relation to the first carrier, 'I am still adamant that I want it in 2012'.<sup>65</sup> We support the need to de-risk the CVF programme in the Assessment Phase. However, further delays to Main Gate approval and the subsequent letting of a Demonstration and Manufacture contract, will impact upon the target ISD of 2012 for the first carrier—some seven years away. Mr Coles told us that 2012 was 'still the target date [ISD] for this programme'.<sup>66</sup> He also told us that:

It does not follow that taking the main investment decision is linearly related to when the in-service date will be. You can be doing a lot of de-risking in the assessment phase which actually makes the date you are going to deliver it more achievable.<sup>67</sup>

37. The Minister told us that:

I note the target dates the Department has set itself in the past. However, as Minister I reserve the right to set the in-service date of these ships once these Main Gate decisions have been properly bottomed out.<sup>68</sup>

38. Some press reports in late November 2005 suggested that the delivery of the first of the carriers could be pushed back four years to 2016.<sup>69</sup>

**39. We remain to be convinced that the date for Main Gate approval and the In-Service Date are not directly related. While we acknowledge that some slippage of the Main Gate date can be contained, there must be a point at which the lack of Demonstration and Manufacture phase funding, including the purchase of long lead items, impinges on the In-Service Date.**

**40. We welcome the frankness of the new Minister for Defence Procurement with regard to the target In-Service Dates for the CVF programme. But, while we agree that the programme needs to be fully de-risked and understood before proceeding to the Main Gate decision, we are concerned that further delays to the main investment decision will lead to slippage to the In-Service Dates well beyond those which MoD originally set itself.**

**41. If the In-Service Dates for the CVF programme are substantially later than 2012, there is a serious risk of a capability gap emerging which would impact upon the ability of the Royal Navy to undertake its role effectively. If there is a serious risk of slippage, MoD and the Royal Navy must make plans for bridging this gap, which might include extending the lives of the current aircraft carriers and the aircraft which operate from them. This could be at substantial additional cost, particularly if the current carriers**

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65 Defence Committee, Fourth Report of Session 2004-05, *Future Capabilities*, HC 45-II, Q 534

66 Q 88

67 Q 89

68 Q 151

69 Sunday Times, 27 November 2005

**require major refits. We expect MoD to demonstrate that appropriate contingency plans are in place to address any potential capability gap.**

## Alliance Agreement

42. In January 2003, MoD announced its decision to follow an ‘Alliance’ approach for the CVF programme involving BAE Systems, Thales UK and MoD.<sup>70</sup> The Alliance approach is a novel approach for MoD procurement programmes and represents a major change, as MoD procurement policy for the last two decades has been to devolve risk and management authority to a prime contractor. As a member of the Alliance, MoD will be part of the decision making process as the Alliance develop the Carrier programme and will have early visibility of the programme’s progress.<sup>71</sup> The previous Defence Committee concluded in its 2003 *Defence Procurement* report that ‘there is significant merit in the novel ‘Alliance’ arrangement for the Future Carrier programme’.<sup>72</sup>

43. On 7 February 2005 MoD announced that it had appointed ‘Kellogg Brown & Root (UK) Ltd (KBR) to act as the preferred ‘Physical Integrator’ on the future aircraft carrier (CVF) project’. MoD appointed a Physical Integrator (PI) for the programme because it considered that due to the size of the proposed carriers no single shipbuilding facility in the UK had the infrastructure, skills or capacity to build the two ships on its own. The appointment of the PI followed discussion with the Alliance partners. It was agreed that building and integrating the two carriers represented a major challenge requiring considerable project management skills. According to MoD, the PI was appointed to ‘further strengthen... this area and introduce innovation to the manufacturing phase’. KBR has extensive experience of alliances from other sectors including oil and gas and infrastructure.<sup>73</sup>

44. The previous Secretary of State wrote to the then Chairman of the Defence Committee on 7 February 2005 about the announcement of the selection of the PI. The Secretary of State noted that ‘we will develop the precise role and responsibility of the PI in consultation with all Alliance participants over the coming months—an approach that is consistent with alliancing best practice where each participant’s work scope is agreed by the Alliance to ensure that work is allocated to the company best able to deliver it in the most cost effective manner’.

45. MoD’s submission states that ‘agreement of the alliancing principles by the current participants was a significant step forward. Work continues to develop the detailed arrangements. This includes the Alliance Agreement—which will confirm and commit each participant [i.e. MoD and the three commercial companies] to achieving the objectives of the Alliance—and the complementary Works contracts for the Demonstration and Manufacture phase. We aim to conclude these prior to the main investment decision’.<sup>74</sup>

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70 HC Deb, 30 January 2003, col 1026

71 Defence Committee, Eighth Report of Session 2002–03, *Defence Procurement*, HC 694, paras 78–79

72 *Ibid*, p 50, recommendation 13

73 MoD press release, *KBR appointed ‘Physical Integrator’ for Future Carrier project*, 7 February 2005

74 Ev 43

46. Progress on finalising the Alliance Agreement does not appear to have progressed substantially since this issue was examined by the previous Defence Committee. In May 2004, Sir Peter Spencer, Chief of Defence Procurement (CDP), told our predecessors that ‘there is agreement on the large majority of the detail, there are one or two loose ends which we are tidying up’.<sup>75</sup> However, CDP told us, some eighteen months later, that:

those loose ends turned out to be much more fundamental than I had understood them to be at the time.<sup>76</sup>

47. In January 2006, it will be three years since the announcement that the CVF programme would follow an Alliance approach. Mr Pryor, Chairman of Devonport Royal Dockyard Limited and the KBR representative on the UK Aircraft Carrier Alliance project told us that ‘it is our experience that it takes time to settle down relationships between the companies and between individuals in their companies’.<sup>77</sup> He also told us that ‘another reason why it takes so long to build the Alliance because we have to agree the risks that are being handled by my partners and they have to agree the risks that we are handling and the quantification of those risks in monetary terms’.<sup>78</sup> Mr Coles told us that:

It takes a long time to reach those agreements because each company in the Alliance has to assess its role and its responsibilities and those of its partner companies in the Alliance to share in the risk and reward. It takes a long time to reach an agreement in that process.<sup>79</sup>

48. The Minister told us that:

we are asking the potential participants, i.e. the companies coming into this Alliance, to sign up to a commitment in terms of the cost, risk and timescale in a way that has not been done before.<sup>80</sup>

**49. It is disappointing that the Alliance Agreement has still to be finalised, eighteen months after our predecessors were told that there were only “one or two loose ends” to tidy up. We remain unclear as to what the precise role of the Physical Integrator is and will be. If the Alliance partners continue to be unable to finalise the Alliance Agreement, we consider that this might indicate that the Alliance approach is not suited to this particular programme, or that there are issues with the individual partners which cannot be resolved.**

50. On the roles and responsibilities of the Alliance partners, Mr Pryor told us that:

The precise roles and responsibilities of each member of the Alliance will be agreed and they will have to accept as part of that agreement a risk reward in the Alliance contract. Each company has a specific task agreed un-contractually and they buy into

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75 Defence Committee, Sixth Report of Session 2003–04, *Defence Procurement*, HC 572-II, Q 272

76 Q 183

77 Q 2

78 Q 12

79 Q 1

80 Q 150

that by taking a share of the risk and the reward within the project. All which will be put into the contract as the over-arching contract, the individual contracts will say what they have to do and the risk reward is built into that mechanism.<sup>81</sup>

51. Mr Coles also told us that the individual parties will ‘all share in the risk, that is the difference’.<sup>82</sup> Mr Pryor told us that:

The point of the Alliance is that we all sink or swim together, so if one of my Alliance colleagues or partners fails in his scope of work, I take the risk on that failure, likewise he is taking the failure on my scope of work’.<sup>83</sup>

52. CDP emphasised that ‘because risk is not transferred but is shared, because we all win or lose together, there is much more of a due diligence process going on by all members of the Alliance to make certain that they do really understand this proposition, because there is not the scope that there would have been in a more conventional contract for that risk and cost increase simply to be handed back to the Ministry of Defence’.<sup>84</sup>

53. The proposed contractual arrangements on the CVF programme give rise to questions about conflicts of interest. MoD is a member of the Alliance and also the customer, while BAE Systems is a member of the Alliance and also an owner of one of the shipyards likely to be involved in building the carriers. The Minister told us that:

Whether it is with an Alliance structure or not the MoD has that conflict of interest. What the Alliance structure does is manage it properly.... It actually puts the Ministry of Defence into the relationship with the other partners such that there really is a joint contract which both sides are bound to, which motivates both sides when the going gets tough, as it always does on these complex projects, and to sit down together and quickly and efficiently make the decision to resolve them. So it is a recognition of that potential conflict which exists and it is a mechanism for managing it’.<sup>85</sup>

54. Mr Coles did not believe that BAE Systems had a conflict of interest, but acknowledged that MoD has ‘to make sure they do not have two voices at the table, a shipbuilding voice and a voice as a member of the Alliance’.<sup>86</sup> He told us that ‘it is something that we have to tease out. You are right to recognise it’.<sup>87</sup>

**55. There continues to be uncertainty about the precise roles and responsibilities of each of the Alliance partners. The proposed risk-sharing on the CVF programme will be different to the risk-sharing arrangements on previous defence equipment projects and the contractual arrangements between the Alliance partners have still to finalised. Sharing risks should incentivise the Alliance partners to deliver a positive result on the**

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81 Q 11

82 Q 12

83 Q 12

84 Q 183

85 Q 185

86 Q 55

87 Q 56

programme, but we were concerned by talk of ‘sink or swim together’. If the Alliance approach does not deliver the expected results, the real losers will be the British taxpayers and the Royal Navy.

56. We have some concerns about potential conflicts of interest for Alliance partners and expect MoD to have in place appropriate arrangements to ensure that these are properly managed.

57. The Alliance approach is a novel approach for MoD and we consider it too early to assess whether the Alliance approach on the CVF programme has been successful. We expect MoD to identify lessons from the experience of using an Alliance approach on the CVF programme, and to ensure that such lessons are implemented if an Alliance approach is to be used on other equipment procurement programmes.

### Shipbuilding Strategy

58. Four UK shipyards were identified in January 2003 as being potentially involved in the CVF programme—BAE Systems Naval Ships at Govan, Vosper Thornycroft at Portsmouth, Swan Hunter on Tyneside and Babcock BES at Rosyth.<sup>88</sup> MoD’s submission states that ‘the extent of their involvement, and the potential for involvement of other yards will be decided on the basis of achieving VFM [Value for Money] while taking into account the capability, capacity and resources of UK industry to meet the full range of planned naval programmes.’<sup>89</sup>

59. MoD’s submission states that ‘the creation and integration into the Alliance of the Shipbuild Entity and the development of the optimum shipbuild strategy is clearly a key issue for the Alliance and work on this continues’.<sup>90</sup> Mr Coles told us that the Shipbuild Entity:

was that part of the programme which would bring together all the people who might be engaged in building the ship, i.e. the physical construction and the detailed design, to form, if you like, a piece in the Alliance we would contract with or negotiate with about how this is best to be done.<sup>91</sup>

60. Mr Coles told us that, in relation to the progress on developing the optimum shipbuild strategy, ‘there are a number of proposals that the industry and the Alliance have had about where this ship could be assembled and where it could be done and how it could be done, but we have not reached a definitive view on any particular solution.’<sup>92</sup> He stressed that ‘it is a long process and no decisions have been taken.’<sup>93</sup>

61. On the issue of where the two carriers will be built, Mr Coles told us that ‘we are going to build two aircraft carriers in this country.... There is no wish, no need, nor political will

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88 Ev 43–44

89 Ev 44

90 Ev 43

91 Q 53

92 Q 58

93 Q 58

to go overseas'.<sup>94</sup> In terms of the actual shipyards which would be used, the Minister told us that:

We are talking with a number of yards about the various aspects of the shipbuilding... But we have not signed contracts with any of them yet, so therefore I cannot say whether a particular yard is or is not in the deal.<sup>95</sup>

62. When allocating the work on the two carriers to the UK shipyards, Mr Coles told us that 'when we come to the time to make decisions about where the work will be contracted we will doubtless take in performance as one of the criteria'.<sup>96</sup>

**63. MoD has yet to reach a view on the optimum shipbuild strategy for the CVF programme. We note that MoD's plan is to build the two carriers in the United Kingdom but it has yet to decide on which shipyards will be involved in the construction of the two carriers.**

64. The CVF programme is of key importance to the UK's military shipbuilding industry. The Minister told us that:

These ships are so large that they will involve multiple shipyards to build them. They will also involve multiple industrial companies who own these shipyards working together in a way which has never been done before in this country. If we do this right we have a real opportunity to help the shipbuilding industry in this country to evolve in a direction which will be suitable for the long-term needs of this country and be globally competitive. The importance of getting this interaction between the Carrier project and our long-term Maritime Industrial Strategy is key.<sup>97</sup>

If we get this Carrier project right we will put shipbuilding on a strong footing for the evolution in the future.<sup>98</sup>

And:

We need to make sure that we find a new way of getting different yards within the country to work together such that the resources are pooled to enable more things to be done at once as we will require, but we also need to see that the yards make investments to improve the overall standard of efficiency and skills in the long term, such that at the end of these we have an industry which is more efficient and more effective than it is now.<sup>99</sup>

65. The scale of the CVF programmes raises issues about the UK's naval shipbuilding capacity, both in the short term and the long term. Delays to Main Gate approval and to the letting of a Demonstration and Manufacture contract can have serious implications for UK shipyards, on, for example, investment decisions and issues concerning training and

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94 Q 69

95 Q 195

96 Q 66

97 Q 148

98 Q 150

99 Q 154

retention of workers. The Minister told us that he was ‘very mindful that the yards around the country need to have the earliest possible decision on the carrier project’.<sup>100</sup> Mr Coles admitted us that ‘the issue raised about skill loss and facilities loss is a real issue and we are alive to it’.<sup>101</sup> In relation to short-term capacity, Mr Pryor told us that:

We now have to match a programme of two complex ships, decide what is the cheapest, best, most easily constructible design of the ship, how you break it up into small pieces, where you deliver it to build into a big ship, and we are talking about trying to do this in facilities that we are going to need in five years’ time or longer.<sup>102</sup>

The team has gone out to industry with request information to assess the current state of facilities. We went out to 21 shipyards in this country. 18 responded within the timescale, two have since gone into administration, leaving us with 16.<sup>103</sup>

66. Scottish Enterprise Glasgow commented that:

procurement delays on the largest naval programme, CVF, mean that the industry is instead currently facing significant potential job losses. As a consequence, the potential for naval shipbuilding projects to act as a catalyst for long term skills development is looking increasingly problematical.<sup>104</sup>

67. We asked whether the UK would have the capacity to build the two carriers. Mr Coles replied that ‘our current analysis suggests that we have enough national capacity to manufacture and assemble these ships with some marginal increase in capacity in manpower’.<sup>105</sup>

68. In respect of the longer term issues, MoD commissioned the RAND Corporation to undertake a study of the UK’s naval shipbuilding. The outcome of the study was published in a 2005 report ‘*The United Kingdom’s Naval Shipbuilding Industrial Base—The Next Fifteen Years*’. In this report, RAND noted that the impetus for the study was a concern on the MoD’s part that the confluence of several ship-building programmes could potentially overburden the industry. Some of MoD’s ship programmes have passed Main Gate, such as Astute-class attack submarines, Bay-class landing ship dock (LSD(A)) and Type 45 destroyers. Other ship programmes which are pre-Main Gate are the Future Carrier (CVF), Future Surface Combatant (FSC), Joint Casualty Treatment Ship (JCTS) and Military Afloat Reach and Sustainability (MARS). In its report, RAND noted that ‘the period between 2007 and 2013 is much busier for naval shipbuilding than has been seen recently’.

69. The Minister for Defence Procurement has been asked by the Secretary of State to deliver a Defence Industrial Strategy by Christmas 2005.<sup>106</sup> He told us that ‘it has been

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100 Q 197

101 Q 72

102 Q 69

103 *Ibid*

104 Ev 50

105 Q 73

106 Q 153

recognised for some time in the Department that the lack of a clear Defence Industrial Strategy has dogged our ability to make decisions on projects within an overall framework'.<sup>107</sup> The Defence Industrial Strategy would include a Maritime Industrial Strategy.<sup>108</sup> On the latter, the Minister is 'demanding gritty conclusions on shipbuilding and ship support....'.<sup>109</sup>

**70. We welcome MoD's decision to produce a Defence Industrial Strategy, which will include a Maritime Industrial Strategy. The CVF programme is vital to the future of the UK's military shipbuilding industry and its importance will need to be reflected in the Maritime Industrial Strategy. We plan to examine the Defence Industrial Strategy in the New Year.**

**71. We note that MoD considers that there is enough national capacity to manufacture and assemble the two aircraft carriers. However, we are concerned that delays to Main Gate approval and the letting of Demonstration and Manufacture contracts are impacting upon UK shipyards, jobs are at risk and some potential contractors have gone into administration.**

**72. If there are delays to the CVF programme, there is a risk that the construction of the two carriers will come at a time when a number of naval shipbuilding programmes will also be in the Demonstration and Manufacture phase. This is likely to put pressure on the UK's naval shipbuilding capacity and could lead to work going overseas. We recommend that MoD identify ways to manage the potential peaks in demand for naval shipbuilding programmes over the next ten years or so.**

**73. We are concerned that, once the busy period for the UK's naval shipbuilding industry ends in 2013 or so, that there will be another gap in work for UK naval shipyards. We expect MoD's Maritime Industrial Strategy to set out how the peaks and troughs seen in the UK naval shipbuilding industry in the past will be managed in the future.**

## Possible French involvement

74. France also has a requirement for a new aircraft carrier in a similar timescale to the UK. The UK and French defence industries have been 'tasked jointly by the UK and French National Armament Directors (NADs) to propose areas for possible co-operation as a way of reducing costs and risk whilst preserving our respective national programmes and timelines'.<sup>110</sup> Industry has confirmed that it is technically feasible for the basic CVF design 'to be adapted to meet French requirements, with the French being responsible for some specific adaptations'.<sup>111</sup>

75. Mr Coles told us that 'the French administration will have to decide whether they wish to pursue that with HMG or not, and those conversations are obviously going on but are

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107 Q 152

108 Q 153

109 Speech to the Royal United Services Institute (RUSI), 12 September 2005

110 Ev 44

111 *Ibid*

not yet concluded nor decisions made'.<sup>112</sup> Some press reports suggested that the French might make a decision by mid-October 2005.<sup>113</sup> Mr Coles thought it would be 'a little bit later than that by couple of months'.<sup>114</sup> There is a range of possibilities for French involvement in the CVF programme. We were told that 'the dialogue about how that would work and if it would work needs to be teased out'.<sup>115</sup>

76. In terms of the potential benefits from French involvement in the CVF programme, Mr Coles told us that 'there would have to be genuine savings, i.e. that it did not cost us any more but it did cost us measurably less'.<sup>116</sup> Non-recurring costs would offer savings and 'some of the equipments could be bought jointly as opposed to separately, so for example buying three of things instead of two of things could give you some marginal savings, both in the administration and the procurement costs'.<sup>117</sup> There was also the potential for savings in whole life support costs. Mr Coles told us that 'the long-term support of three ships as compared to two ships is a saving to both nations'.<sup>118</sup>

77. Given that the UK has funded the design of the future carriers, we asked whether, if France decided to get involved in the CVF programme, it would contribute to the design costs. Mr Coles told us that:

I am sure you would wish me to say that if we have developed something in the UK over a long period of time, we would expect some contribution towards that if we had entered into any programme, and I suspect that would be the case.<sup>119</sup>

78. On the other hand, collaborative projects have, in the past, frequently suffered from time delays. Mr Coles commented that 'the first thing is that any relationship on any sort of programme would have to ensure that the UK programme was not disturbed'.<sup>120</sup> The Minister re-iterated the point: 'it must not negatively impact the British project'.<sup>121</sup> CDP also set out the position: 'we will not countenance anything which will do any damage to the timescale of our programme or do anything to adversely affect risk and cost as well'.<sup>122</sup>

79. The Minister was aware of the risk regarding international collaborative projects:

history also tells us that international collaborative defence projects can go seriously wrong, not always but quite often and therefore we need to make sure, because of the importance of this project to the United Kingdom's defence posture, to the United Kingdom's maritime shipbuilding industry, that any potential joint working which is

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112 Q 28

113 *UK urges France to accept existing carrier design*, Jane's Defence Weekly, 7 September 2005

114 Q 31

115 Q 39

116 *Ibid*

117 *Ibid*

118 *Ibid*

119 Q 33

120 Q 39

121 Q 173

122 Q 175

done on the French Carrier is done in a way which is consistent with the needs which we have'.<sup>123</sup>

**80. There could be potentially substantial benefits if France became involved in the CVF programme. These include the possibility of real cost savings, both procurement and support cost savings, and closer relations between the British and French navies. But international collaborative projects have in the past experienced problems, such as time slippage. If France decides to become involved in the CVF programme, we expect MoD to ensure that the UK programme would not suffer delays to the In-Service Date for the UK carriers.**

## 3 Joint Combat Aircraft Programme

### Background

81. The Strategic Defence Review confirmed the requirement to provide the Joint Force 2000 (joint command for all Harrier forces) with a multi-role fighter / attack aircraft to replace the Royal Navy Sea Harrier and the Royal Air Force Harrier GR7.<sup>124</sup> The Joint Combat Aircraft (JCA) will be operated as part of a Joint Force, from both the new aircraft carriers and land bases, in a manner similar to the existing Joint Force Harrier.<sup>125</sup>

82. The *Future Capabilities* White Paper of July 2004 states that:

The new carriers deploying the Joint Combat Aircraft (JCA) will transform our capability to project power from the sea... The state-of-the-art, multi-role JCA will provide significantly increased performance, improving strike and reconnaissance capabilities, as well as incorporating stealth technology.<sup>126</sup>

83. The Joint Strike Fighter (JSF) is a US-led programme and has been selected by the UK to meet the JCA requirement.

84. A list of key events to date in the procurement of the CVF programme is shown at Table 2.

**Table 2: Key events to date on the JCA programme**

Date	Key Event
January 2001	The Secretary of State for Defence announced that the United States (US) led Joint Strike Fighter (JSF) aircraft had the best potential to meet the JCA requirement. The JCA programme entered its Demonstration Phase through participation in the JSF System Development and Demonstration Phase.
October 2001	Lockheed Martin, along with Northrup Grumman and BAE Systems as Team Lockheed were selected as the prime contractor for the JSF System Development and Demonstration programme. The UK participated in the source selection process.
September 2002	The Secretary of State for Defence announced that the UK had selected the Short Take Off and Vertical Landing (STOVL) variant of JSF to meet the JCA requirement.

Source: National Audit Office and Ministry of Defence<sup>127</sup>

124 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-II, Session 2005–2006, p 49

125 Ev 40

126 Cm 6269, p 7

127 National Audit Office, *Major Projects Report 2005 Project Summary Sheets*, HC 595-II, Session 2005–2006, p 49 and Ev 40

85. Prior to the decision in favour of the JSF in 2001, studies were undertaken into other options to meet the JCA requirement. Other options considered were the US F/A-18E, French Rafale M, 'navalised' Eurofighter, and an advanced Harrier. These other options were all rejected on 'cost-effectiveness grounds'.<sup>128</sup>

86. The UK is the only full (Level 1) collaborative partner with the US, both nations having agreed the JSF aircraft's key performance parameters. There are eight non-US countries participating in the System Development and Demonstration phase.<sup>129</sup> The JSF programme in the United States is called the F-35 Joint Strike Fighter programme.

### Forecast costs

87. The current forecast cost of the JCA Development and Demonstration phase for the UK is £1,914 million against an approval (most likely cost) of £2,034 million<sup>130</sup> a forecast cost underrun of £120 million.<sup>131</sup> The spend to the end of 2004–05 on the JCA Development and Demonstration phase was some £475 million.<sup>132</sup> The overall cost of the JSF programme for the UK is expected to be in the region of £7–10 billion.<sup>133</sup> However, the 'UK costs for the Manufacture and In-Service Support phases will not be established until the Production Main Gate decision is taken'.<sup>134</sup> The key driver for the costs of manufacture and In-Service Support will be the number of aircraft ordered. MoD told us that:

Final numbers (and variants) will depend on the outcome of ongoing work to confirm overall Future Combat Air Capability requirements. While no final decisions have been taken we anticipate buying up to 150 STOVL variants of the Joint Strike Fighter to meet our JCA requirement.<sup>135</sup>

88. Aircraft production is expected to commence in 2007 with production of the early UK aircraft commencing in 2009. Deliveries of UK aircraft are expected to commence in 2011.<sup>136</sup>

### Forecast In-Service Dates

89. The ISD for the Joint Strike Fighter is defined as 'when the capability provided by the Joint Combat Aircraft is assessed as available for operational use with an initial cadre of aircraft and trained personnel'.<sup>137</sup> In the NAO Major Projects Report 2004, the estimated

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128 Ev 45

129 Ev 40–41

130 Ev 41

131 The National Audit Office, in its *Major Projects Report 2005* (HC 595-II, Session 2005–2006, p 50) reports the current forecast cost as £1,914 million against an approval (highest) of £2,236 million (a forecast cost underrun of £322 million)

132 Ev 41

133 Defence Committee, Sixth Report of Session 2003–04, *Defence Procurement*, HC 572-II, Ev 100

134 Ev 41

135 Ev 42

136 Ev 41

137 *Ibid*

In-Service Date is given as ‘2012 to coincide with the first of the new aircraft carriers (CVF) entering service’.<sup>138</sup> MoD told us that:

The ISD will be set when the main investment decision for JCA is taken. Our previously announced planning assumptions based on an ISD of 2014 have not been changed. This would require taking delivery of the aircraft from 2011, and to be conducting flight trials, including work-up flying from the CVF, in advance of the ISD.<sup>139</sup>

**90. We are concerned that the In-Service Date for the JSF has slipped from 2012 to 2014, some two years after the first carrier was originally expected to come into service. It is essential that the In-Service Dates for the CVF and JCA programmes match. If not, the UK could be left with new carriers without new aircraft to operate from them, or new aircraft with no new carriers to operate from.**

### Progress on the JSF programme

91. The previous Defence Committee was concerned that, during the development of the JSF, the work to mature the design to meet weight targets to achieve desired performance levels had proved much more demanding than expected and that the problem appeared to be greater on the STOVL variant of the JSF.<sup>140</sup> MoD told the previous Committee in July 2005 that ‘the weight mitigation work has identified the required weight savings, and we remain confident that this issue will not cause further delays to the programme’.<sup>141</sup>

92. MoD assured us that in total there has been a 3,000 lb reduction in the actual weight of the STOVL aircraft and the equivalent of a further reduction of 1,000 lb through improvements in thrust and a review of the landing requirements.<sup>142</sup>

93. MoD acknowledges that on a complex development programme, risks remain and work continues on the assessment of how any further problems could be mitigated.<sup>143</sup> Commodore Henley, the JCA Integrated Project Team Leader, told us that:

There are risks out there and it would be foolish at this stage in the development programme to say there are not.... There is still the risk that aircraft do grow in development as you find things.<sup>144</sup>

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138 National Audit Office, *Major Projects Report 2004 Project Summary Sheets*, HC 1159-II, Session 2003–2004, p 49

139 Ev 41

140 Defence Committee, Sixth Report of Session 2003–04, *Defence Procurement*, HC 572-I, para 82

141 *Future Capabilities: Government Response to The House of Commons Defence Committee’s Fourth Report of Session 2004–05*, Cm 6616, p 12, recommendation 26

142 Ev 42

143 *Ibid*

144 Q 143

94. Mr Burbage, Executive Vice President and General Manager, F-35 JSF Program, Lockheed Martin, provided us with further assurance on the weight problems:

We eliminated about 3,000 lbs of real weight from the airplane and we improved our propulsion efficiency by about 700 lbs, so there was a net result of about 3,700 lbs of improvement in the airplane.<sup>145</sup>

As an indication of the progress being made on the JSF programme, he told us that ‘it is important to note that the first STOVL airplane is now in build’.<sup>146</sup>

**95. We note that the weight problems on the STOVL variant of the JSF have been mitigated but we expect MoD to continue to monitor closely weight and other risks on the JSF programme.**

96. We were interested in whether the JSF STOVL variants being procured by the UK and the US were identical. Commodore Henley said that he was ‘not aware that they are different in any respect’,<sup>147</sup> and Mr Burbage told us that ‘the airplanes are identical’.<sup>148</sup> He also added that ‘the plane is designed to a set of requirements. The requirements are identical for the US and the UK’,<sup>149</sup> but ‘there are some differences in UK weapons and US weapons’.<sup>150</sup>

**97. We have been assured that the STOVL variant of the JSF aircraft being procured by the UK and US are identical and are being designed to the same set of requirements, though, once delivered, the aircraft will be fitted with different weapons.**

## Production and support

98. It is expected that a Memorandum of Understanding (MOU) will be signed between the collaborative partners on the JSF programme in December 2006 to enable production, sustainment [support] and follow-on development. Formal negotiations on this MOU have commenced.<sup>151</sup>

99. We were interested in how the construction and maintenance work will be allocated among the nations involved in the JSF programme. Mr Burbage explained that ‘the plan is to put in an affordable and efficient support structure.... The US/UK is part of a baseline programme so if additional international partners want to add to infrastructure that comes at their cost if it is not part of the baseline’.<sup>152</sup>

100. Given that the UK is the only Level 1 partner on the JSF programme, we asked if this entitled the UK to a guaranteed part of the construction and maintenance work.

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145 Q 107

146 *Ibid*

147 Q 114

148 Q 109

149 Q 120

150 Q 118

151 Ev 41

152 Q 138

Commodore Henley explained that the JSF programme was not a ‘work-share’<sup>153</sup> programme and that work will be allocated on the basis of ‘global best value basis’.<sup>154</sup> He also told us that for development and the low-rate initial production runs the UK ‘is getting about \$6.75 billion-worth of work back for our \$2 billion investment’.<sup>155</sup>

## Information sharing

101. The previous Defence Committee expressed concern about information sharing and access to technology on the JSF programme. In its 2004 *Defence Procurement*, the previous Committee concluded that:

Information transfer delays, on programmes such as the Joint Strike Fighter, can prevent co-operating industrial partners from fulfilling their contractual obligations.... We note that MoD considers that, on the Joint Strike Fighter programme, the necessary data and technical information is now being exchanged, and we expect MoD to ensure that this remains the case.<sup>156</sup>

102. Sir Dick Evans the former Chairman of BAE Systems, told the previous Committee in 2004 that on the JSF programme, ‘it is no good when you have signed up and paid your cheque over then trying to go back to negotiate the release of technology’.<sup>157</sup>

103. A Bilateral Defense Acquisition Committee has been set up as a forum between the United States Department of Defense and the UK MoD. Its terms of reference include to ‘develop and co-ordinate efforts to improve information and technology exchange including the timely release of classified and sensitive information’.<sup>158</sup>

104. We examined the issues of information sharing and access to technology to establish whether the necessary data and technical information were being exchanged to the required timescale. We were particularly concerned by an article in *Aviation Weekly* on 11 July 2005 where the Chief of the Air Staff was reported to have stated that ‘there is clearly a growing urgency in addressing technology access and the related ability of independent support of the aircraft’.

105. We asked Commodore Henley about the mechanisms in place to ensure the UK received all the required information and access to technology to allow it to maintain the aircraft when in service and undertake future upgrades—referred to as ‘sovereign capability’. Commodore Henley told us that:

we have a policy of progressive release of information and progressive understanding. We have agreement signed between the US and UK at Secretary of

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153 Q 139

154 *Ibid*

155 Q 139

156 Defence Committee, Sixth Report of Session 2003–04, *Defence Procurement*, HC 572-I, para 145

157 Defence Committee, Sixth Report of Session 2003–04, *Defence Procurement*, HC 572-II, Q 16

158 HL Deb, 10 June 2004, cols 49–50WA [Lords written answer]

State level called “exchange of letters” which lays out the UK’s need to be able to operate this aircraft in a sovereign capability when the aircraft is in service.<sup>159</sup>

I cannot understate the fact that sovereign capability for this aircraft is the most important aspect.<sup>160</sup>

106. We also agree that the most important area of technology and information transfer relates to sovereign capability. There is a risk that the UK could find itself in a position where it had one of the most advanced military aircraft but could not operate it independently of the US. We asked the Minister what was being done to ensure that the UK would have total operational independence for the JSF when it was in service. He told us that:

Where it stands today, my understanding is that we do not have concerns relating to our ability to meet those types of issues relating to operational sovereignty, but we are mindful of that and that is why we have made sure that we have visibility of when those issues are going to come up—that we have clarity of that—and that we make sure that those requirements are being met at that point in terms of technology transfer. My understanding is that we do not have an issue on that today but as we go forward with the project this is something that we have to monitor closely.<sup>161</sup>

**107. We fully support MoD’s position that the ability to maintain and upgrade the JSF independently is vital. We would consider it unacceptable for the UK to get substantially into the JSF programme and then find out that it was not going to get all the technology and information transfer it required to ensure ‘sovereign capability’. This needs to be sorted out before further contracts are signed and we expect MoD to set a deadline by which the assurances need to be obtained. If the UK does not receive assurances that it will get all it requires to ensure sovereign capability, we would question whether the UK should continue to participate in the JSF programme.**

**108. We note that production and support of the JSF will be allocated on the basis of global best value. Achieving best value is important but, if this resulted in all future support of the aircraft being undertaken overseas, then achieving sovereign capability could be put at risk. We expect MoD to demonstrate that achieving global best value and ensuring sovereign capability are compatible.**

109. Commodore Henley also told us that a technology matrix was now in place and ‘it is the vehicle around which we are conducting discussions at the moment....That is why we spend a great deal of time breaking this down into individual technologies and saying, okay, against this technology are we going to be able to get transfer?....We are making progress on identifying the stopper to those technologies and then finding ways to work round those stoppers to get us to the capability that we need’.<sup>162</sup>

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159 Q 121

160 Q 131

161 Q 228

162 Q 131

110. We were also interested in the UK industry's view on the progress being made in sharing information and technology on the JSF programme. Mr Mogford of BAE Systems explained that:

with the Joint Strike Fighter programme we have had a progressive succession of licence applications which increase access to technology.... we have had approvals for release of information which allows us to meet the contract obligations.<sup>163</sup>

111. We asked the Minister what discussions he has had with the US administration on the issue of the transfer of information and technology. He replied that:

I have had conversations with members of the United States' administration.... My understanding of the position we are in at the moment is that we are not short of any information at the present time which is adversely affecting the project. The concern that we have is that in the relatively near future we are going to need to see the transfer of information and intellectual property for us to see our needs in the long-term to be met. So it is important that those things take place and we are making that point very clear.<sup>164</sup>

112. While we recognise the need for MoD to discuss issues relating to the transfer of information and technology with the US administration, the US Congress is where the issue needs to be addressed as individuals within the US Congress appear to be the main opposition to allowing information and technology transfer.

**113. We note that good progress with the release of information and technological exchange on the JSF programme has been made to date, but concerns remain. MoD has focussed its efforts on the US Administration to ensure that all the information and technology it requires on the JSF programme for the future is obtained in a timely fashion. In our view, dialogue with the US Administration is not sufficient given the key role played by the US Congress. We will support MoD on this issue where we can. We intend to visit Washington in the New Year and plan to raise this issue with the US Administration and with Members of Congress.**

## United States review of the programme

114. A Quadrennial Defense Review in the US is looking at all defence programmes including the JSF. Press reports in early autumn 2005 suggested that the US JSF programme could be trimmed back due to budgetary pressures. There were also press reports that UK defence officials were worried that the Quadrennial Defense Review could affect the UK plans to procure JSF aircraft. Senator Carl Levin, ranking Democrat on the Senate Armed Services Committee, is quoted in *Aviation Week & Space Technology* of 10 October 2005 as saying that 'the F-35 Joint Strike Fighter is likely to be trimmed back.....there's going to be budgetary pressure on those programs and others'.

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163 Q 128

164 Q 219

115. We were concerned to hear that possible changes to the US JSF programme might impact on the UK JSF programme. Mr Burbage told us that:

Congress directs the Secretary of Defense to conduct a detailed review on the alignment of the defence budgets with future strategies....There have been a number of different options looked at and our best sense right now is that the project is doing quite well in the end game.<sup>165</sup>

I have heard nothing threatening the STOVL version at all lately'.<sup>166</sup>

116. We asked the Minister about the press reports and the possible impact on the UK JSF programme. He commented that:

It is something which we are watching very carefully indeed.... In terms of the requirement which the United Kingdom has for the Short Take Off and Landing aircraft, we believe that the Short Take Off and Landing aircraft, given its vital importance to the US Marine Corps, is not under threat, but we are watching it very carefully indeed.<sup>167</sup>

117. *Defense News* of 8 November 2005 reported that 'although the JSF programme has been mentioned as a potential candidate for termination or deep cuts due to US budget constraints, Defense Secretary Donald Rumsfeld predicted at a Pentagon briefing that the JSF will be funded robustly in the Bush administration's fiscal 2007 budget request, due for release in early February [2006]'.<sup>168</sup>

118. If the STOVL variant of the JSF did not go ahead in the US, it would cast serious doubts on the UK JSF programme. We asked the Minister whether there were alternatives to the STOVL version of the JSF for the UK. He told us that it is:

important to us that this programme continues. In terms of a plan B, if there is a decision taken not to go forward with this aircraft which we require i.e. the STOVL aircraft, then we will have to look at those plan B alternatives. I do not think it is appropriate for me to go into what plan B is. We do not believe that we need to do that.<sup>168</sup>

119. This suggests that MoD has contingency plans, but remain confident in the JSF programme. However, press reports in early December 2005<sup>169</sup> claimed that the US would not do a deal on information sharing and access to technology unless it knew that the UK had a serious alternative to the JSF. The press reports also claimed that the plan B being worked on in the UK was a navalised version of the Eurofighter / Typhoon aircraft.

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165 Q 107

166 Q 108

167 Q 210

168 Q 211

169 *Britain in battle with US over fighter plane*, Sunday Times, 4 December 2005

120. We are concerned by press reports suggesting that the US might cut back on the STOVL variant of the JSF as this could have serious implications for the UK JSF programme. While we note the recent assurance given by the US Defense Secretary that the US JSF programme would be ‘funded robustly’, we expect MoD to keep a close watch on this issue and to assess the likely impact on the UK JSF programme.

## 4 Conclusion

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121. MoD is procuring two new aircraft carriers and new carrier borne aircraft to provide the Royal Navy with a 'carrier strike' capability to meet the new environment set out in the Strategic Defence Review of 1998.

122. As with many other defence equipment programmes, our Armed Forces are likely to receive the equipment they need, and the capability they require to undertake their role, later than planned. Despite trying a new approach to procurement on the carrier programme, there is a serious risk that the carriers will enter service later than originally planned. The new carrier borne aircraft, the Joint Strike Fighter, has already suffered a two year slippage. As a consequence, there is likely to be a capability gap and the Royal Navy will be forced to run on less capable equipment, beyond the date when it was due to be withdrawn from service. This will come at a cost, both financially and in terms of reduced capability.

123. The procurement of the Joint Strike Fighter, a US-led programme, has also raised concerns about the UK's ability, in the future, to maintain and upgrade the aircraft independently of the US. To ensure it has this ability, the UK needs cast iron assurances from the US, its closest ally, that it will get all the information and technology it requires. If such assurances are not received, the question must be asked as to whether the UK should continue its involvement in the programme. This would be unfortunate, given the UK's close relationship with the US.

## Conclusions and recommendations

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1. Given that the original target date for Main Gate approval on the CVF programme was two years ago, it seems to us extraordinary that there is now no target date at all. MoD should have a target date, even while accepting that it may not be achieved because work to clarify programme timescale, costs and risks is still being undertaken. (Paragraph 22)
2. It is disappointing that design definition work on the CVF programme has not progressed much in the last year, even though it is a key objective of the Assessment Phase. (Paragraph 25)
3. We welcome MoD's decision to commission an independent analysis by the RAND Corporation to identify options for reducing costs on the CVF programme. We acknowledge that the cost reduction options have been considered and are mostly being implemented. The CVF programme is likely to be very costly, both in terms of procurement and construction costs, and through-life costs. It is essential that MoD and the other Alliance partners continue to identify ways to drive down costs. If costs are not constrained, there is a very real risk that the CVF programme could become unaffordable. (Paragraph 35)
4. We remain to be convinced that the date for Main Gate approval and the In-Service Date are not directly related. While we acknowledge that some slippage of the Main Gate date can be contained, there must be a point at which the lack of Demonstration and Manufacture phase funding, including the purchase of long lead items, impinges on the In-Service Date. (Paragraph 39)
5. We welcome the frankness of the new Minister for Defence Procurement with regard to the target In-Service Dates for the CVF programme. But, while we agree that the programme needs to be fully de-risked and understood before proceeding to the Main Gate decision, we are concerned that further delays to the main investment decision will lead to slippage to the In-Service Dates well beyond those which MoD originally set itself. (Paragraph 40)
6. If the In-Service Dates for the CVF programme are substantially later than 2012, there is a serious risk of a capability gap emerging which would impact upon the ability of the Royal Navy to undertake its role effectively. If there is a serious risk of slippage, MoD and the Royal Navy must make plans for bridging this gap, which might include extending the lives of the current aircraft carriers and the aircraft which operate from them. This could be at substantial additional cost, particularly if the current carriers require major refits. We expect MoD to demonstrate that appropriate contingency plans are in place to address any potential capability gap. (Paragraph 41)
7. It is disappointing that the Alliance Agreement has still to be finalised, eighteen months after our predecessors were told that there were only "one or two loose ends" to tidy up. We remain unclear as to what the precise role of the Physical Integrator is and will be. If the Alliance partners continue to be unable to finalise the Alliance

Agreement, we consider that this might indicate that the Alliance approach is not suited to this particular programme, or that there are issues with the individual partners which cannot be resolved. (Paragraph 49)

8. There continues to be uncertainty about the precise roles and responsibilities of each of the Alliance partners. The proposed risk-sharing on the CVF programme will be different to the risk-sharing arrangements on previous defence equipment projects and the contractual arrangements between the Alliance partners have still to be finalised. Sharing risks should incentivise the Alliance partners to deliver a positive result on the programme, but we were concerned by talk of 'sink or swim together'. If the Alliance approach does not deliver the expected results, the real losers will be the British taxpayers and the Royal Navy. (Paragraph 55)
9. We have some concerns about potential conflicts of interest for Alliance partners and expect MoD to have in place appropriate arrangements to ensure that these are properly managed. (Paragraph 56)
10. The Alliance approach is a novel approach for MoD and we consider it too early to assess whether the Alliance approach on the CVF programme has been successful. We expect MoD to identify lessons from the experience of using an Alliance approach on the CVF programme, and to ensure that such lessons are implemented if an Alliance approach is to be used on other equipment procurement programmes. (Paragraph 57)
11. MoD has yet to reach a view on the optimum shipbuild strategy for the CVF programme. We note that MoD's plan is to build the two carriers in the United Kingdom but it has yet to decide on which shipyards will be involved in the construction of the two carriers. (Paragraph 63)
12. We welcome MoD's decision to produce a Defence Industrial Strategy, which will include a Maritime Industrial Strategy. The CVF programme is vital to the future of the UK's military shipbuilding industry and its importance will need to be reflected in the Maritime Industrial Strategy. We plan to examine the Defence Industrial Strategy in the New Year. (Paragraph 70)
13. We note that MoD considers that there is enough national capacity to manufacture and assemble the two aircraft carriers. However, we are concerned that delays to Main Gate approval and the letting of Demonstration and Manufacture contracts are impacting upon UK shipyards, jobs are at risk and some potential contractors have gone into administration. (Paragraph 71)
14. If there are delays to the CVF programme, there is a risk that the construction of the two carriers will come at a time when a number of naval shipbuilding programmes will also be in the Demonstration and Manufacture phase. This is likely to put pressure on the UK's naval shipbuilding capacity and could lead to work going overseas. We recommend that MoD identify ways to manage the potential peaks in demand for naval shipbuilding programmes over the next ten years or so. (Paragraph 72)

15. We are concerned that, once the busy period for the UK's naval shipbuilding industry ends in 2013 or so, that there will be another gap in work for UK naval shipyards. We expect MoD's Maritime Industrial Strategy to set out how the peaks and troughs seen in the UK naval shipbuilding industry in the past will be managed in the future. (Paragraph 73)
16. There could be potentially substantial benefits if France became involved in the CVF programme. These include the possibility of real cost savings, both procurement and support cost savings, and closer relations between the British and French navies. But international collaborative projects have in the past experienced problems, such as time slippage. If France decides to become involved in the CVF programme, we expect MoD to ensure that the UK programme would not suffer delays to the In-Service Date for the UK carriers. (Paragraph 80)
17. We are concerned that the In-Service Date for the JSF has slipped from 2012 to 2014, some two years after the first carrier was originally expected to come into service. It is essential that the In-Service Dates for the CVF and JCA programmes match. If not, the UK could be left with new carriers without new aircraft to operate from them, or new aircraft with no new carriers to operate from. (Paragraph 90)
18. We note that the weight problems on the STOVL variant of the JSF have been mitigated but we expect MoD to continue to monitor closely weight and other risks on the JSF programme. (Paragraph 95)
19. We have been assured that the STOVL variant of the JSF aircraft being procured by the UK and US are identical and are being designed to the same set of requirements, though, once delivered, the aircraft will be fitted with different weapons. (Paragraph 97)
20. We fully support MoD's position that the ability to maintain and upgrade the JSF independently is vital. We would consider it unacceptable for the UK to get substantially into the JSF programme and then find out that it was not going to get all the technology and information transfer it required to ensure 'sovereign capability'. This needs to be sorted out before further contracts are signed and we expect MoD to set a deadline by which the assurances need to be obtained. If the UK does not receive assurances that it will get all it requires to ensure sovereign capability, we would question whether the UK should continue to participate in the JSF programme. (Paragraph 107)
21. We note that production and support of the JSF will be allocated on the basis of global best value. Achieving best value is important but, if this resulted in all future support of the aircraft being undertaken overseas, then achieving sovereign capability could be put at risk. We expect MoD to demonstrate that achieving global best value and ensuring sovereign capability are compatible. (Paragraph 108)
22. We note that good progress with the release of information and technological exchange on the JSF programme has been made to date, but concerns remain. MoD has focussed its efforts on the US Administration to ensure that all the information and technology it requires on the JSF programme for the future is obtained in a timely fashion. In our view, dialogue with the US Administration is not sufficient

given the key role played by the US Congress. We will support MoD on this issue where we can. We intend to visit Washington in the New Year and plan to raise this issue with the US Administration and with Members of Congress. (Paragraph 113)

23. We are concerned by press reports suggesting that the US might cut back on the STOVL variant of the JSF as this could have serious implications for the UK JSF programme. While we note the recent assurance given by the US Defense Secretary that the US JSF programme would be 'funded robustly', we expect MoD to keep a close watch on this issue and to assess the likely impact on the UK JSF programme. (Paragraph 120)

## Annex: List of Abbreviations

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CVF	Future Aircraft Carriers (Carrier Vessel Future)
FSC	Future Surface Combatant
FSTA	Future Strategic Tanker Aircraft
HVAC	Heating, Ventilation and Air Conditioning
IPT	Integrated Project Team
ISD	In-Service Date
JCA	Joint Combat Aircraft
JCTS	Joint Casualty Treatment Ship
JSF	Joint Strike Fighter
KBR	Kellogg, Brown and Root UK Ltd
MARS	Military Afloat Reach and Sustainability
MASC	Maritime Airborne Surveillance and Control
MoD	Ministry of Defence
MOU	Memorandum of Understanding
NADs	National Armament Directors
NAO	National Audit Office
PI	Physical Integrator
RAF	Royal Air Force
RN	Royal Navy
RUSI	Royal United Services Institute
STOVL	Short Take Off and Vertical Landing
UK	United Kingdom
US	United States
VFM	Value for Money
WLC	Whole Life Cost

# Formal minutes

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**Tuesday 13 December 2005**

Afternoon Sitting

Members present:

Mr James Arbuthnot, in the Chair

Mr Colin Breed

Mr David Crausby

Linda Gilroy

Mr Mike Hancock

Mr Brian Jenkins

Mr Kevan Jones

Robert Key

Mr Desmond Swayne

## **1. Future Carrier and Joint Combat Aircraft Programmes: consideration of Chairman's draft Report**

The Committee considered this matter.

Draft Report (Future Carrier and Joint Combat Aircraft Programmes), proposed by the Chairman, brought up and read.

*Ordered*, That the Chairman's draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 123 read and agreed to.

Annexes [Summary and List of Abbreviations] agreed to.

*Resolved*, That the Report be the Second Report of the Committee to the House.

Several papers were ordered to be appended to the Minutes of Evidence.

*Ordered*, That the Appendices to the Minutes of Evidence taken before the Committee be reported to the House.

*Ordered*, That the provisions of Standing Order No. 134 (select committee (reports)) be applied to the Report.

*Ordered*, That the Chairman do make the report to the House.

[Adjourned till Tuesday 10 January at Ten o'clock.]

## List of witnesses

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### Tuesday 18 October 2005

*Page*

**Mr John Coles CB**, CVF and MASC Integrated Project Team Leader, Ministry of Defence, **Mr Allan Cameron**, Managing Director, Thales Naval Business, UK, **Mr Chris Geoghegan**, Chief Operating Officer, BAE Systems and **Mr Tony Pryor CBE**, Chairman of Devonport Royal Dockyard Limited (Kellogg, Brown and Root representative on the UK Aircraft Carrier Alliance project) Ev 1

**Mr Tom Burbage**, Executive Vice President and General Manager F-35 JSF Program Lockheed Martin, **Mr Steve Mogford**, Chief Operating Officer, BAE Systems, members of Team Lockheed, the Prime Contractor, and **Commodore Simon Henley MBE, RN**, Joint Combat Aircraft Integrated Project Team Leader, Ministry of Defence Ev 14

### Tuesday 25 October 2005

**Lord Drayson**, a Member of the House of Lords, Minister for Defence Procurement, and **Sir Peter Spencer KCB ADC**, Chief of Defence Procurement, Ministry of Defence Ev 21

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## Reports from the Defence Committee

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### Session 2005–06

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First Report	Armed Forces Bill	HC 747

# Oral evidence

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## Taken before the Defence Committee

on Tuesday 18 October 2005

Members present:

Mr James Arbuthnot, in the Chair

Mr David S Borrow  
Mr Colin Breed  
Derek Conway  
Mr David Crausby  
Linda Gilroy  
Mr David Hamilton

Mr Mike Hancock  
Mr Dai Havard  
Mr Kevan Jones  
Robert Key  
John Smith  
Mr Desmond Swayne

*Witnesses:* **Mr John Coles CB**, CVF and MASC Integrated Project Team Leader, Ministry of Defence, **Mr Allan Cameron**, Managing Director, Thales Naval Business, UK, **Mr Chris Geoghegan**, Chief Operating Officer, BAE Systems and **Mr Tony Pryor CBE**, Chairman of Devonport Royal Dockyard Limited (Kellogg, Brown and Root representative on the UK Aircraft Carrier Alliance project) examined.

**Q1 Chairman:** Good morning. Welcome to the first evidence session of the Defence Committee of this Parliament. It is about the Future Carrier and Joint Combat Aircraft Programmes Inquiry. I would like to welcome everybody in the back of the room as well as those who have kindly agreed to come and give evidence to us. Firstly, if I might welcome Mr Coles, Mr Cameron, Mr Geoghegan and Mr Pryor. There are a number of questions which we need to go through. This is a very long running programme which is absolutely essential to the country's strategy in defence terms and we will need to come back to it over the years. I wonder if I can begin by asking if you would please—perhaps this is best addressed to you, Mr Coles—set out for us how the Alliance approach is expected to work? What will the role of the Ministry of Defence be compared with the other Alliance partners. That may seem a large question, but I would nevertheless be grateful if you can cover it in five minutes, or preferably even less, because we have got a lot of questions that we need to get through.

**Mr Coles:** I will try my best, Chairman. Essentially, an Alliance for a major project—quite common in other industries—has a number of partners who have specific roles and responsibilities that progress the programme, including the clients. They are combined by an over-arching Alliance agreement to deliver the programme which they all buy into—that is whatever the cost applying to the schedule is—or in the risk reward, including the clients. Most importantly, each of the contractors has a works contract which specifies precisely what their contribution is to the various parts of the programme. That is how it is set out in those terms. It takes a long time to reach those agreements because each company in the Alliance has to assess its role and its responsibilities and those of its partner companies in the Alliance to share in the risk and reward. It takes a long time to reach an agreement in that process. Each company brings its own specialist skills and each other company

challenges that company to deliver them in the best way. Therefore, we deliver the best for the project, not necessarily the best for each company. It is a very different way of contracting and a very different way of behaving across the companies, including Government officials in those projects. That is a broad summary of how it is set out to work.

**Q2 Chairman:** Would any of your colleagues like to add anything to that or comment on it?

**Mr Cameron:** I would just add that being part of the Alliance is being part of a co-operative relationship which brings to bear the best intellectual capacity of the Alliance members in the execution of this very important project. We are very pleased to be part of that relationship in that co-operative approach to delivering CVF.

**Mr Pryor:** I would like to echo John's comment about the length of time it takes to form an Alliance. We joined the Alliance in the latter months to bring our expertise in the offshore industry Alliances, to meet the best investing parts of building these aircraft carriers. It is our experience that it takes time to settle down relationships between the companies and between individuals in their companies so that we can present a seamless product to each other and to the completion of the project.

**Q3 Chairman:** Would you say that two and a half years was nevertheless quite a long time to take in forming an Alliance and finalising those arrangements?

**Mr Pryor:** Chairman, I am not sure we have been going at it for two and a half years in the form of Alliance-building mode; the Alliance members you see in front of you here have been at it since February this year.

**Q4 Chairman:** What was it that was identified between 2003 and 2005 for the decision to prompt the Physical Integrator?

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18 October 2005 Mr John Coles CB, Mr Allan Cameron, Mr Chris Geoghegan  
and Mr Tony Pryor CBE

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**Mr Coles:** We all recognise that this project is beyond any one company to deliver. Also, we recognise that business as usual, ie the way we have done things before, would not be successful for this programme. We need to bring in some different views, different talents and different experiences of different industries to bear down on the way we have done business in the past. That was the background to bring in the Physical Integrator, a different perspective on how to run a complex project on multi-sites actively bringing skills sets in. That is how the origin of all this started to bring in a Physical Integrator.

**Q5 Mr Jones:** On that point, is the reason why we have an Integrator, the fact that the contract was awarded both to BAE Systems and Thales? What was going to happen if previously one of those solely had been awarded the contract?

**Mr Coles:** Of course we would not do it that way and we elected not to do that. We elected to bring in a third party to bring those skills sets together, those very skills sets this project needs to assemble it and to complete it on many sites.

**Q6 Mr Jones:** The answer to that question is if we had given it to Thales or BAE Systems it would not have needed a Physical Integrator.

**Mr Coles:** If we had the prime contract, of course we would not have done it that way round, you are quite correct.

**Q7 Mr Jones:** A political fudge has led to more cost?

**Mr Coles:** Indeed not; the exact opposite, I would say. You bring in a different talent into that programme.

**Q8 Mr Jones:** No. If you had awarded it to a prime contractor you would not have needed to employ a systems integrator, would you?

**Mr Coles:** Of course not.

**Q9 Mr Jones:** Therefore there was a cost involved that you did not need?

**Mr Coles:** I do not accept that.

**Q10 Chairman:** With whom will the Ministry of Defence be contracting if there is not a prime contractor?

**Mr Coles:** It will be contracting with each of the companies in the Alliance separately and collectively.

**Q11 Chairman:** How is the allocation of work and risk going to be sorted out if the Ministry of Defence is contracting with everybody?

**Mr Coles:** The precise roles and responsibilities of each member of the Alliance will be agreed and they will have to accept as part of that agreement a risk reward in the Alliance contract. Each company has a specific task agreed un-contractually and they buy into that by taking a share of the risk and the reward within the project. All which will be put into the

contract as the over-arching contract, the individual contracts will say what they have to do and the risk reward is built into that mechanism.

**Q12 Mr Hancock:** If that is the case, who carries the risk if one element of the Alliance fails to deliver on time so causing a cost-overrun to another member of the Alliance partnership? Who then meets the cost, the Alliance generally or the MoD?

**Mr Coles:** The individual parties will all share in the risk, that is the difference. Each party is carrying the risk in part for its colleagues. Perhaps one of my colleagues will be able to amplify that.

**Mr Pryor:** Perhaps I can build on that point. The point of the Alliance is that we all sink or swim together, so if one of my Alliance colleagues or partners fails in his scope of work, I take the risk on that failure, likewise he is taking the failure on my scope of work. We believe that it is a stronger bond to deliver the outcome of the project than being independent and saying, "It is your fault, it is not my fault". That is another reason why it takes so long to build the Alliance because we have to agree the risks that are being handled by my partners and they have to agree the risks that we are handling and the quantification of those risks in monetary terms. That is part of the time it takes to nail that down, as John said, in the collective agreement, which would be the Alliance contract, which is a binding contract, and the individual works' contracts from the Ministry of Defence on the individual partners.

**Q13 Mr Harvard:** If it is awarded to one company, then you do not need the Physical Integrator, but we have now got two, so you need the Physical Integrator. Potentially we may even have three, of course, if the French get involved; we will get on to that later on. The point my colleague made about extra costs, surely what we are really seeing here is that the Physical Integrator is an extra cost because of the deficiencies. It seems to me that you have just described a very differentiated process of contract negotiation and contract compliance which also needs to be done now as well which you might not have needed in quite the same way if you had awarded it to one organisation. I think we are seeing, are we not, the fact that project management skills and various other skills were deficient in the DPA and possibly in the MoD and this is some sort of policeman gatekeeper contract compliance organisation that is going to run in order to make a project work in any event, is it? You make the savings because you get it right rather than get it wrong, but there is an extra cost.

**Mr Coles:** In any project you would need all the skills sets that a Physical Integrator in this project would bring. You would need them anyway, someone would have to do that. Whether it is done within one company and you will bring a second or a third company to it is not really the issue, it is that skills set they bring, that experience and knowledge base they bring to what has been our way of doing it before.

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**Mr Geoghegan:** I think it is worth noting that from the outset, even when this competition was run essentially under the heading of “prime contractorship”, both of the competing companies, Thales and BAE Systems, put forward teams of companies to respond to that competition. Both sides recognised that it would require a number of companies to come together, both in terms of skills and capacities, to respond to this project. Whether it be through a prime contractor or whether it be through the current proposed Alliance structure, there would have been a series of interfacing contracts that would have to have been put in place. In many cases the prime contractor would have been handling that interface process. This is another form of dealing with a complex set of project interfaces of contracts.

**Q14 Chairman:** Sir Dick Evans told this Committee last year that he was worried about the whole thing developing into a sort of procurement committee. Do you think he was wrong to express concerns about that?

**Mr Geoghegan:** I think those concerns come with looking at something which is new and seeing a lot of interfaces. A lot of the attention that we have been putting on the programme over the last 12 months has been trying to identify the minimum number of interfaces that are required within this Alliance and putting the required governance around those.

**Q15 Mr Jones:** I do like straight answers, but the quick answer to it is you have put an extra layer in here because the prime contractor would have been doing that job. My fear is—and I think Sir Dick Evans said this—that you are going to get a procurement committee here, are you not? The fact is that if you had awarded it to BAE Systems or Thales they would have been the main integrator, you would not have then had to appoint a system integrator to do that because they would have done it. Surely there is an added cost there. I will try again but obviously you are not going to answer it.

**Mr Coles:** I will answer it again and if anyone wants to add anything, they can. The same task would need to be performed whether in an Alliance or in a prime contract or a joint venture, the same task would need to be done, so it is not an extra task we are bringing in.

**Q16 Mr Jones:** It is an extra cost.

**Mr Coles:** It is not an extra cost either. It is a question of who does that task and the experience they bring to execute that task from other industries and other knowledge bases that we may not have brought in the past. That is how Alliances work. We bring together the skills of a number of parties who combine together to produce a superior outcome.

**Q17 Mr Jones:** What was wrong with BAE Systems, for example, or Thales being the prime contractor? As your colleague said, clearly you had to negotiate with different companies, but why have you got two

possible prime contractors now with another organisation sitting above them as an integrator? That must add a cost. You cannot tell me it has not.

**Mr Coles:** I do not agree that it adds a cost, it is a different way of running the project.

**Q18 Mr Jones:** It is a bureaucratic way of doing it.

**Mr Cameron:** I would not agree with that. If you look at the experience of the offshore industry in particular and the construction industry, the use of Alliances to drive out cost and change behaviour can be instrumental in bringing on some of these projects, which would never have gone ahead without an Alliance, and we want to bring that focus to this particular project.

**Q19 Mr Jones:** Are you saying that either Thales or BAE Systems were not capable on their own of being the prime contractor?

**Mr Coles:** We needed all the skills sets, both Thales, BAE Systems and others to bring this project on. It is a complex project.

**Q20 Mr Jones:** The answer to that question is BAE systems or Thales on their own could not have done this?

**Mr Pryor:** I think the last time that the defence industry in the UK could deliver a prime contract delivered by its own resources was back in the early 1900s. Certainly my old company, Vickers, built the Picasa for the Japanese in that way. Everything was built in its own factories in the early 1990s. Latterly, and certainly nowadays, somebody may have the prime contract but a very large proportion of the supply of that prime contract is subcontracted to others.

**Q21 Mr Jones:** I am aware of that.

**Mr Pryor:** In the original two competing bids two years ago now, KBR was supporting Thales and their rainbow team. At the time I remember commenting that if Thales had won the contract the first phone call would be to my boss and my second phone call would be to BAE to go and talk about how to bring BAE’s expertise into our rainbow team. As it happened, when Thales did not succeed as the prime contractor in forming the Alliance, the first phone call was to my boss and the second phone call was to BAE saying, “Can we come and help you”. We need all the skills of industry required to deliver the programme.

**Q22 Mr Jones:** Stop trying to confuse the issue. I am quite aware about the procurement process in the defence industry. Are you saying that in order to procure these two ships it was not possible for either BAE Systems or Thales on their own to be the prime contract or of the systems integrator role?

**Mr Pryor:** With their own resources?

**Q23 Mr Jones:** No, obviously using a system in terms of a working partnership. I do not know enough about the two bids, the bit about the industry. Why could one of those not have delivered this on their own?

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**Mr Coles:** Of course, none of us would say they could not, but we believe this is a better way of running the project to bring in the costs, performance and time using all the skill sets including the three companies represented here and the Ministry and a better way of sharing the risk.

**Q24 John Smith:** I do not think we have a problem with the concept of Alliance as long as there are very clear lines of accountability in terms of contract responsibility and contractors are held to account. Is that the role of the integrator, Mr Coles? Will that be your organisation's role to hold contractors to account?

**Mr Pryor:** Our role as a Physical Integrator was to bring a set of experiences that were different from the other two partners, mainly from the offshore oil industry sector—we have provided a team of people with that expertise—and to bring a particular set of tool sets in programme management, cost control management, interface management and planning to the process. In addition, we can act to undertake the competitive procurements which might involve Alliance partners bidding for fabrication assembly set in to work and we can act in that role because we have no manufacturing facility here in the UK; we supply people and tool sets. In that way our expertise is in placing the contracts, and to the extent that our programme managers and project managers in the integrated team will be liaising with the works' contract suppliers, we will be holding them to account. Their contract is placed with the Ministry of Defence, so it is the Alliance holding the contractors to account.

**Q25 Mr Hancock:** If I can take you back to before the contracts were awarded. No Minister giving evidence to us or in discussions we had within the MoD suggested at any stage that there would be anything other than one prime contractor, and if that was the case the price should have included the integrated project leader who would have driven that. When you submitted your bids separately, presumably your bids included that price. It was only when Ministers decided by—using Kevan's words—a political fudge to bring both companies into the table that they suddenly realised they might have a problem here and they needed a third player to make sure this was done. The Alliance was put together and a cost was evaluated to that which was over and above the original cost which both of you bid. Advancing Kevan's point: there was an increase in cost before the contract even started because of the process. If you were really cynical, and I am, you could suggest that was done because the Government was slightly uneasy about the ability of these two companies to work together without someone prepared to knock heads together. Also, it had some doubts about the procurement cabinet inside the MoD having the ability to do that themselves. Is that right or wrong?

**Mr Coles:** Certainly KBR, in their role, will bring some additional project management skills into the project which are essential. All those things we need

to do for the Alliance and for the project. Secondly, they bring the innovation, perhaps, from the oil and gas process changes which we will need inside the project. It is a combination of things, it is not just one particular issue. It is the whole range of skills they bring in from a sector which has a good track-record of bearing down on costs, the large multi-site complex projects which this will be.

**Chairman:** Thank you for those answers. Can we move on now to French involvement in the programme or the possibility of French involvement in the programme.

**Q26 Robert Key:** Mr Coles, can you please confirm that French companies have approached the French and British Governments with a view to building a third carrier in addition to the two British carriers to serve French interests?

**Mr Coles:** There is no proposal from any French company to build any part of this programme at all.

**Q27 Robert Key:** Has there been a proposal from the French Government?

**Mr Coles:** That is a different question.

**Q28 Robert Key:** That is why I am asking it.

**Mr Coles:** The French navy, the French Government, the French administration have a requirement for a second carrier in the public domain, which they recently funded which has a very similar shape, size and role to the current UK version. They have been studying that to see whether the UK ship, as defined today, could be adapted—I use the phrase adapted—to meet their particular requirement. They have concluded with industry's support, French industry in particular, that is a possibility. Therefore, that is where the project stands at the moment. The French administration will have to decide whether they wish to pursue that with HMG or not, and those conversations are obviously going on but are not yet concluded nor decisions made.

**Q29 Robert Key:** Can I explore who the "they" are in France? Are we talking about the Director-General of Armaments?

**Mr Coles:** I would say the French administration in general.

**Q30 Robert Key:** I am sorry, it cannot be the "administration in general". Are we talking about the DGA or not?

**Mr Coles:** We are.

**Q31 Robert Key:** It is the DGA, good. It is said that the French are going to have to make a decision on whether or not to proceed with this by mid October; that is now. Do you believe that is the timescale by which the French are going to decide this?

**Mr Coles:** I believe it will be a little bit later than that by a couple of months.

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**Q32 Robert Key:** That is quite soon. Do you think it would be possible for French companies, like DCN, Thales possibly, to join the Alliance or would there be a separate French Alliance?

**Mr Coles:** It would be possible but I doubt very much whether they would join the Alliance. They might be subcontracted to the Alliance, but that is speculation.

**Q33 Robert Key:** If the French accepted the design of the carriers so far, would they pay for the intellectual property rights so far agreed by the British or would they just start paying for any amendments that they have made because after all the chief executive of DCN said, "Clearly the British design is compatible with the operational means of the French Navy and if the French Government chooses a design we will use it and just do some small changes". It rather assumes that the French think they can pick up all the intellectual property rights that you have worked on so far for free.

**Mr Coles:** I am sure you would wish me to say that if we have developed something in the UK over a long period of time, we would expect some contribution towards that if we had entered into any programme, and I suspect that would be the case.

**Q34 Robert Key:** Who will decide that? Will it be the Alliance who decides the shape of the relationship or will it be led by the Ministry of Defence at a political level?

**Mr Coles:** I am sure we will give Ministers the advice, but they would take back what that will be.

**Q35 Robert Key:** Can I ask Mr Pryor whether you or the company have had discussions with any other French companies in this respect about this particular project?

**Mr Pryor:** Nothing substantial. I have had two visits to France on the project about six months ago.

**Q36 Robert Key:** Can I ask Mr Cameron too, because obviously this is absolutely crucial to you, that the French Thales, who are your owners, if you like, are very keen to progress this, are they not?

**Mr Cameron:** Yes, they are. To date, we have conducted studies with the entity which is a combination of DCN and Thales France with our Alliance partners on CVF, namely Thales, in a lead role supported by BAE today. Those studies were requested in order to prove the feasibility of design commonality in the main hull relating to both projects. Those feasibility studies did nothing more than prove that a high degree of commonality is possible.

**Q37 Robert Key:** Finally, back in the Sixth Report of Session 2003–04, the Defence Procurement Report of this Committee, Sir Dick Evans, who at that time was the chairman of BAE Systems, told the Committee that he did not expect BAE Systems would participate to any significant extent. Has that changed, Mr Geoghegan? Would BAE Systems now be interested in this sort of scheme with the French?

**Mr Geoghegan:** It will clearly depend on the nature of the proposal which emerges from those discussions. Clearly there are some key issues. There is the one of the IPR, as John said, and I am sure, that can be sorted out. There is also the issue of bringing any French involvement into the programme not affecting the underlying project that we are running here in the UK. Therefore, the depth of involvement that the French industry would have clearly has bearing on that. We have been party to the discussions with the French industry and have evaluated a number of thoughts of how they might include themselves, and they are wide ranging. Certainly at one end of the spectrum where we are sharing common design and we are co-operating, but short of jointly building ships, then we can see value to both the French and to the UK and on that basis system BAE Systems would be part of it.

**Q38 Robert Key:** Mr Coles, have any other governments within the EU or beyond it expressed any interest in joining in the Carrier Programme?

**Mr Coles:** Not to my knowledge.

**Robert Key:** Thank you.

**Q39 Mr Crausby:** I can understand why the French would be interested in co-operating on this project. It makes obvious sense if they want to build carrier and we want to build two carriers. It stands out a mile they would be interested. Can you tell us something about why that would be in the best interests of the British Government? Would there be cost savings and where would those cost savings be from? Perhaps you could tell us something about the added complications that would bring in and where. I was interested in what you said that there would be sub-contractors to the Alliance. Clearly the French Government would not be sub-contractors to the Alliance so can you tell us something about that relationship and how the French Government would fit into the Alliance and what cost savings it would deliver?

**Mr Coles:** Assuming that they would wish to do so, there would be some separate issues that would need to be resolved. The first thing is that any relationship on any sort of programme would have to ensure that the UK programme was not disturbed. So that is first of all. The second issue would be there would have to be genuine savings, ie that it did not cost us any more but it did cost us measurably less. We would have to look at the areas where that could be achieved. One is clearly the non-recurring costs that all projects have. Clearly if you were to have some form of common parts of the ship, the effort required could be in some way shared, if I can use that phrase. You could imagine that some of the equipments could be bought jointly as opposed to separately, so for example buying three of things instead of two of things could give you some marginal savings, both in the administration and the procurement costs. Finally, there is the whole life support costs. The long-term support of three ships as compared to two ships is a saving to both nations. The dialogue about how that would work and if it would work needs to

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be teased out because what you do not want to do is introduce any additional bureaucracy to the programme to make it more complicated because clearly neither nation would wish that. So there is a whole range of possibilities. None has actually been decided because until the French administration—to use that phrase with apologies—decides it wishes to pursue this, then really they are only possibilities and they only become probabilities by further clarification with French officials and with the French Navy.

**Q40 Mr Crausby:** Clearly it would involve quite complicated negotiations on a project of this size. Can we be absolutely assured that the MoD will not make any compromises from the point of view of design of the programme? One of the things that interests me is what will the French fly off their carrier in comparison to what we fly off our carrier? Will that mean completely different things from the point of view of the carriers? I know we are going to talk about the Joint Strike Fighter later but these two things have got to come together in some respects from the point of view of the initial design. Can you tell us something about that?

**Mr Coles:** There are some parts, of course, and the aircraft is a particular one, where the French Navy would be operating different aircraft, but the broad characteristics of how those aircraft would be operated from either ship would be very similar. There would not need to be detailed changes to support the individual aircraft because of the aircraft characteristics, so that is not a big issue, I do not think. The rough shape and size will accommodate both aircraft. The real issue—and you have touched on this—is we do not want to make it over-complicated in terms of administration, in other words you do not want to produce costs and delay in decision-making. The key to any collaborative programme or co-operation programme—call it what you like—if that is the way that Ministers decided to go, would be to ensure that we did not produce additional bureaucracy and decision-making in the process. Perhaps finally, it is not aligning our requirements. This is taking a solution that we have developed, as Mr Key said, and adapting it to meet French requirements. So it is adaptation of this new product, but of course any adaptation, if they decided to co-operate or collaborate, would be for the French administration, for the French DG in this case, to decide how to fund that. It would not be funded by UK plc.

**Q41 Mr Crausby:** You have talked a great deal about cost but what about jobs? There are many different cross-references from the point of view of what is done in British shipyards. Would you, for instance, consider building all three carriers in French shipyards? Is that on the cards? Is that politically acceptable?

**Mr Coles:** I think those discussions on the particulars of how, what and when we would like to collaborate or co-operate are really quite some

distance off, so I do not think I can give a view on that at this stage. However, you would save some non-recurring costs if you did it in terms of design costs and procurement costs, as I have outlined, you are bound to. How that would work out in terms of sharing those costs and where they would fall is speculative at this stage.

**Q42 Mr Crausby:** The fundamental question is there is an enormous difference between STOVL from our point of view and the French. Can we have some qualification on that as to what the French would fly off their carrier?

**Mr Coles:** I think you would have to ask the French Navy what they are going to fly, but my understanding is that they are flying the Rafale off the carriers (and other aircraft too actually) but you will have to ask them. I can send you a note if you wish.<sup>1</sup> I am not qualified to give an opinion on that.

**Chairman:** I think that would be helpful because the difference between flying STOVL on aircraft and non-STOVL would be quite significant.

**Q43 Mr Hancock:** I must say, Mr Coles, your response to Mr Crausby's question was a lot different to the one you gave to Robert Key. You seem to have had considerable discussions about a contract possibility with the French. In your response to Mr Key you gave the impression that you were just on the edges of it. You went into some detail about what had been discussed and what was potentially on offer there in the relationship. I would be interested to know exactly what your role has been in those negotiations.

**Mr Coles:** I did qualify my remarks, I think, by saying that if we did decide to collaborate with France, this is what we could do, not that we had decided to do, so I did make that distinction.

**Q44 Mr Hancock:** So what has been your role in the negotiations to date?

**Mr Coles:** To facilitate discussions between the French and British industries about what is possible from a technical solution point of view, what is possible—

**Q45 Mr Hancock:** Has this been going on for some time?

**Mr Coles:** It has been going on with the French for, I think, something like two years.

**Q46 Mr Hancock:** Two years with the possibility of a joint venture?

**Mr Coles:** No, no, no, to establish what was possible, whether it was feasible for this particular design to meet the French requirement? That is the first question. Then deciding it is possible, does the French administration wish to pursue and in what format any form of co-operation. That is for them to decide. What could be done thereafter, as I said, there is a whole range of things you could do but that has to be decided and agreed by ministers and none

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of that has been decided. I was just saying these are the range of things that could be possible in any form of programme.

**Q47 Mr Hancock:** Have you had meetings with senior French ministers and British ministers on this issue?

**Mr Coles:** I am sure that is a question for ministers to answer rather than myself.

**Mr Hancock:** You do? I thought that was a legitimate question to ask you.

**Chairman:** I think the question was about senior French ministers rather than—

**Q48 Mr Hancock:** French and UK. I expected an answer.

**Mr Coles:** With respect, Chairman, I think ministers must answer whether they have met with opposite numbers.

**Q49 Mr Hancock:** I asked whether you had met with senior French ministers.

**Mr Coles:** French officials I have met but not French ministers.

**Chairman:** Thank you.

**Q50 Mr Havard:** Can I be clear. What I understood the situation to be is that industry have been tasked with doing these discussions you have talked about, which are about technical feasibility and about reducing cost and risk, whilst preserving the national programme that currently exists and the time-line. So there is going to be no change there. Is that what you are about doing because that is what the Ministry of Defence think you are doing because that is what they have written to me and told me you are doing? Additional to that, there are other working groups and goodness knows what going on to investigate the range of co-operative possibilities perhaps within that and beyond that as well. That is what I understand is going on. On this question of the French specifically, you talk about adaptations being made so that we do not disturb our national programme, we do not disturb the time-lines and all the rest of it, but if the French participate and do whatever they want to do, if they want to put a new deck on it and have sling shots instead of short take-off and landing or whatever, that is their problem and they pay. Is that where we really are?

**Mr Coles:** What I have said, and I will repeat it, is that we have looked at the technical feasibility and between British and French industry we have concluded—the French administration as we have accepted—that it is technically feasibly to adapt this ship to meet their requirements. Thereafter no decision has been taken about whether they are going to pursue that. If they did, that opens up a whole range of possibilities, as I outlined already, of how you might take that forward, within some constraints about time, our own programme and all the other constraints. So in a sense we have explored what is possible. We have not taken any decisions. It is a decision for the French, I might add, in the first place about whether they wish to pursue it.

**Q51 Mr Havard:** You told me mid-December earlier on. That is when the answer is coming, is it?

**Mr Coles:** That is the sort of time-frame.

**Q52 Mr Havard:** That is the sort of time-frame. What does that mean? Does that mean Christmas or does it mean the middle of January?

**Mr Coles:** I think it means around that time-frame.

**Mr Havard:** That is the best I can do, Chairman.

**Chairman:** I think we have taken that as far as we can. We will now move on to ship building. David, do you want to take that?

**Q53 Mr Hamilton:** The MoD's submission mentioned the "creation and integration into the Alliance of the Shipbuild Entity".<sup>2</sup> What is the Shipbuild Entity and when is it expected to be created?

**Mr Coles:** The Shipbuild Entity was that part of the programme which would bring together all the people who might be engaged in building the ship, ie the physical construction and the detailed design, to form, if you like, a piece in the Alliance we could contract with or negotiate with about how this is best to be done. That is what the Shipbuilding Entity was set up to actually do some time ago. The proposals to the Ministry are not mature enough about how that might work, but it has the aim of creating an entity, ie how to build it and where and the people who might be associated with it.

**Q54 Mr Hamilton:** What would its status be within the Alliance?

**Mr Coles:** That would need to be debated. It could either be a separate sub-alliance or they could be full partners or a combination. That is yet to be teased out because we have not received formal proposals from the companies about what that format might finally look like.

**Q55 Mr Hamilton:** BAE Systems is a member of the Alliance and owner of one of the shipyards. There is an obvious conflict there. How will you be able to resolve that conflict with BAE Systems?

**Mr Coles:** One of the roles is—and it does depend on the final format of the Shipbuild Entity of course—for KBR on behalf of the Alliance to police precisely prices and the programme to make sure that it is all viable, so they would have a role in that as well. I am not sure there is a conflict of interest, although we have to make sure they do not have two voices at the table, a shipbuilding voice and a voice as a member of the Alliance.

**Q56 Mr Hamilton:** That is not a conflict?

**Mr Coles:** It is something that we have to tease out. You are right to recognise it.

**Mr Pryor:** There are many normal procedures which we have employed in very similar situations when individual companies inside an alliance are bidding to the alliance for work in various of their facilities. What normally happens—and certainly this is my

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own personal experience—is that you run an assessment tender process with sealed bids at which you have independent observers for those sealed bids (in this case we had the Ministry of Defence as the independent observer) and the participating Alliance member does not participate in the recommendation of the assessment team. It goes to the Alliance Management Board, which is the executive authority for the whole project, and at that board the participating member has to be excused, or they excuse themselves, from the decision process, and it accepts the decision of the other alliance members on the particular tender put forward. So there are some very robust procedures for making sure that the conflict of interest is not there.

**Q57 Mr Hamilton:** Can you find an independent observer?

**Mr Pryor:** I have operated many times with independent observers. They come either from industry or from one of the trade associations normally.

**Chairman:** We will now move on to the potential shipyards. Mike, do you want to start on this?

**Q58 Mr Hancock:** When the contract was being talked about there was a lot of speculation around the country about who would benefit from the shipbuilding. It finally came to fruition, I think, in January 2003 where four yards in particular were identified—BAE Systems' naval yard at Govan, Vosper Thornycroft in my own constituency at Portsmouth, Swan Hunter on Tyneside, and Babcock BE at Rosyth. Is it still the intention of the Alliance to give the work to these four yards in the same sort of proportions that were being discussed back in those heady days of January 2003?

**Mr Coles:** I think what I would say is there are a number of proposals that the industry and the Alliance have had about where this ship could be assembled and where it could be done and how it could be done, but we have not reached a definitive view on any particular solution. Clearly what I and the rest of the Alliance board want to establish is any solution that is put up minimises capital investment, that the solution offered has the capability and capacity to match all this, that we have the right level of competition and the right skills-set to do this. In a project like this to bring all the Alliance partners in and to sign up to that, as I said some time ago, is a long process and if we want to de-risk this and take the risk out of the programme we have to get all that information assembled, clearly on the table, and understood by all, before we make recommendations. In the end these would be the sorts of things you are doing to the rest of the Ministry of Defence to make sure that it is the viable way forward and is a minimum-cost solution for the delivery of these ships. So it is a long process and no decisions have been taken. A lot of people are speculating how we could do this, where we could do this, but I need to think about capacity, capability, cost, risk and minimum capital investment, because all those are important factors in driving the final

costs of the programme. We do not want to create capacity, for example, that we would only need for a short time. So it is a complex jigsaw to put together and we have not actually reached a solution yet.

**Chairman:** Mike Hancock wants to come back on that but before he does Kevan has a question.

**Q59 Mr Jones:** So the report in the *Sunday Times* that Swan Hunter, one of the main four yards mentioned, is not actually one of the main yards is not correct?

**Mr Coles:** As I said, we have not decided on any solution so no decision has been taken. As far as I can judge, there is enough potential work for any of these four who wants to compete for work.

**Q60 Mr Jones:** I hear what you are saying but can I come back to you and say that I actually met last week with one of these four yards who confirmed to me the fact that Swan Hunter was not going to be part of that four, the reason for it being—you mentioned de-risking and I understand risk aversion—because of the problems that Swan Hunter is having already with its own landing support ship, notably that the cost overruns had been tremendous, that it is basically now being managed in the yard directly by 20 employees of BAE Systems, and the fact that most recently there have been problems with the electronics in those ships. Are you saying that Swan Hunter is really still in those four?

**Mr Coles:** What I have said is all shipyards are capable of building some parts of this ship.

**Q61 Mr Jones:** That is not what I asked you.

**Mr Coles:** I understand that. We have not taken any decisions on any of the companies, never mind if it is Swan Hunter or anybody else.

**Q62 Mr Jones:** I am sorry, one of these yards told me last week that you had made a decision and the reason for that is because the MoD are not satisfied with the present ownership and management of Swan Hunter Shipbuilding

**Mr Coles:** With respect, I cannot really take comments from somebody commenting to you about whether that is the policy or not.

**Q63 Mr Jones:** Well, it was also in the *Sunday Times* a few weeks ago.

**Mr Coles:** Or in the *Sunday Times*.

**Q64 Mr Jones:** Obviously leaked from a very good informed source. Can I just ask one last question then. If they are not part of this, which it seems to me they are not going to be, what is your reaction to Yap Kroese, the owner of Swan Hunter commenting in the *Newcastle Journal* the fact that he is not one of these prime companies, he is not even going to tender for any of the work?

**Mr Coles:** That is a question Mr Yap Kroese has posed and he will have to answer for it.

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**Q65 Mr Jones:** Are you satisfied as the MoD with the work that has been carried out so far on those two ships in Swan Hunter?

**Mr Coles:** It is not my position to comment on projects that I am not responsible for.

**Chairman:** That is not this inquiry.

**Q66 Mr Jones:** I am sorry it is, Chairman, because this same yard might be part of this contract, therefore of course you have got to study what is going on already with a contract that has been let there, surely?

**Mr Coles:** When we come to the time to make decisions about where the work will be contracted we will doubtless take in performance as one of the criteria.

**Q67 Mr Jones:** If you have got a yard which has gone way over cost on two ships, has had another company come in to rescue it in terms of the management process, and I understand some technical problems on one of those ships, surely it is going to be a big no-no to put work in there if you want this to be a risk-free project?

**Mr Coles:** It is certainly one of the factors in selection.

**Q68 Mr Jones:** Can I have a final bite of the cherry because you have not given me a great deal. Have you actually had discussions about the performance of Swan Hunter?

**Mr Coles:** Personally, no.

**Q69 Mr Jones:** Not you. What about your team as a whole?

**Mr Coles:** Do you want to comment on that? They were sent an enquiry out.

**Mr Pryor:** On discussions, if I might backtrack slightly, the first question is very simple. We are going to build two aircraft carriers in this country. Following on from that, all the detailed questions, as John has alluded to, are enormously complex. We are trying to make a plan to build a ship of the nature that no one yard in this country can build, we know that, and we have got to try and utilise the facilities of this country. There is no wish, no need, nor political will to go overseas. It is going to be built in this country. We now have to match a programme of two complex ships, decide what is the cheapest, best, most easily constructible design of the ship, how you break it up into small pieces, where you deliver it to to build into a big ship, and we are talking about trying to do this in facilities that we are going to need in five years' time or longer. We can all forecast where facilities are going to be in five years' time. The team has gone out to industry with request information to assess the current state of facilities. We went out to 21 shipyards in this country, 18 responded within the timescale, two have since gone into administration, leaving us with 16. Here we are trying to make plans for facilities in four or five years' time. I am personally reasonably sure that if Swan Hunter are in business in seven years' time

they will get business because the fabrication capacity of this country is going to be required to deliver these ships.

**Mr Jones:** Not under the current management.

**Chairman:** I think that is as far as we can take this. Mike?

**Q70 Mr Hancock:** I think your last point, Mr Pryor, is a good one. You are talking about capability in five years' time. When these carriers were first talked about the ministers came here to the House itself with glowing comments about the way in which the work would be shared around the country and these four yards in particular would benefit from it. Those yards who you have contacted must be saying to you that delays in getting the main contract decided and their share of the work must be having a dragging effect on them and their ability to hold skills together for five years' time, to have the workforce in place and the ability to do it. I do not know whether the drag out of this will inevitably mean that parts of British ships, if we do a deal with the French, will be built outside of the UK, but certainly if you do not make a decision fairly soon and give some confidence to the companies and to the workforce, you are going to have a real problem in having the skills that you are going to require.

**Mr Coles:** Correct.

**Q71 Mr Hancock:** How are you going to deal with that now?

**Mr Coles:** Those are the complex questions that we are wrestling with at the moment to try and put together a comprehensive project plan that we know will not fall down at the first assessment of risk which is the facilities in place in two years' time. You are quite right, the question of the facilities is not just the facilities but it is the resources and the people there to provide the workforce. We are not in business as project managers, we are not in business in the Alliance to place work in advance of design being completed. We wish to get the programme done in an orderly manner as the best way to keep it to cost, time and specification. We are in discussion with all these shipbuilders—the four and others—to see how we can integrate the plan to the best possible outcome for all parties.

**Q72 Mr Hancock:** It is not unreasonable then for this Committee to assume that out of the four clearly identified at all stages who would be the major beneficiaries of this contract, that you would have had serious negotiations with them and you would have looked, in your words, Mr Coles, at the risks of giving them work. I am not to know. The workforce in those businesses are entitled to know whether or not you feel that they are up to the risk.

**Mr Coles:** Let me come back to the question. The issue raised about skill loss and facilities loss is a real issue and we are alive to it. We have to ensure that when we build the ships they are going to be there. That is one of the concerns we have. In terms of the companies that people have nominated, there are a number of companies here which clearly have the

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skills-set but not necessarily the capacity to be part of this programme. Of course, we have entered into discussions with a number of companies about what they can do and the contribution they can bring but it is the matrix of all those companies and how we put it together that gives us the most economic solution for the final fabrication costs, manufacturing costs, and testing and commissioning, that is the key to this and the roles each might bring to that and those particular skills-sets. I am alert, as we all are alert, to the loss of the fundamental skills-set in design, manufacture, testing and commissioning in this rather complex area.

**Q73 Mr Hancock:** Are you satisfied then, Mr Coles, that we will have the capability to build these two ships wholly in the United Kingdom when you finally decide to let this contract?

**Mr Coles:** Our current analysis suggests that we have enough national capacity to manufacture and assemble these ships with some marginal increase in capacity in manpower.

**Q74 Mr Hancock:** So what you are saying is that currently you would not have the capacity unless one of these operators, or somebody, is prepared to invest in enlarging their facilities? The alternative to that is to have part of this ship built abroad?

**Mr Coles:** You could always look to that as an option, but we will have to make some investment in some companies to finally assemble this ship. We are looking at the minimum capital investment, commensurate with all the other risks.

**Q75 Mr Hancock:** My final question is have you looked in your specific role, either you personally or members of your team, at building parts of these ships outside of the United Kingdom to date?

**Mr Coles:** No, we have not.

**Q76 Mr Hamilton:** Sticking with the second last question raised there about capability and ability, your current view is that we do have the ability within the shipyards at the present time to do that. The problem of course is the time span that you referred to earlier on and that is how these companies are able to maintain that ability to be able to do that work over the next several years. At which point are you going to be able to make a declaration of which of the yards are going to be able to do that even although it is several years down the road so that they can retain the workforce that is necessary for them to be able to do that?

**Mr Coles:** Part of the work that we are engaged in now is to establish what is the optimum build strategy and what that will cost and to ensure that each of my partners in the Alliance agrees with that and the risk that that poses and can sign up to that contractually and that cost, together with all the other costs in the programme, is affordable for the Ministry of Defence. As I say, it is a long drawn-out process to establish that because each of them has to decide what they can bring to the party, what risks

they are going to run, and what risks they are going to share with their other colleagues for an optimum strategy. That does take, and I keep saying this, a considerably time to do because clearly what we do not want to do is embark on a programme that then goes off the rails.

**Q77 Mr Hamilton:** Just to follow up on that. I understand the problem that you are facing. There are 30,000 people employed in Scotland in the defence industry and over 300 companies involved in that. What discussions are you having with other defence contractors when they are putting contracts out? I know your responsibility lies with the two aircraft carriers but there are a number of other contracts that come in between now and that date. What discussions are you having with the Ministry of Defence over that?

**Mr Coles:** We have a large number of suppliers which will be equipment suppliers with which we are holding discussions as part of the design evolution. I could send you a list of the companies if that would be helpful.<sup>3</sup> There are a large number, in excess of 20 or 25, that we regularly have as part of the dialogue and some are engaged and physically employed by the other Alliance partners in supporting the current assessment phase.

**Q78 Robert Key:** Chairman, please may we have that list?

**Mr Coles:** That is not a problem.

**Chairman:** I think that would be helpful. Thank you very much. David?

**Q79 Mr Crausby:** I wanted to raise the issue of Barrow because the expectation from the employees in Barrow is that they are going to be very much involved in the programme, but that inevitably will have an effect on other shipyards. I welcome the question of the involvement of Barrow but it is pretty obvious that if you bring in another yard, that is bound to have an effect on others. I wondered what the prospects for Barrow were. There is a real problem in holding skills, particularly in a place like Barrow for submarines. Are there any complications with Astute? Would you look at it from the point of view of the complications that have been thrown up in the past?

**Mr Coles:** The Barrow site along with the other sites in the United Kingdom are possible contenders for building some parts of this vessel and with their skill-sets, capabilities and facilities (subject to affordability and all the other things I have talked about) they could, like the others, be considered, but at this stage we have not decided whether it is A, B, C, D or E, and I think that is right because we do not want to be forced into solutions before we have got the right solution and the right commitment because it is commitment from the companies as well.

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<sup>3</sup> Ev 47–49

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**Q80 Mr Jones:** In terms of these discussions you have had so far with these various shipyards, can you confirm that the owner of Swan Hunter Shipbuilders, Yap Kroese, has said that unless he is one of these prime yards he is not going to tender for the work? That is what he has said publicly on Tyneside. Did he say that to you directly?

**Mr Coles:** Not to me I do not think.

**Chairman:** We do not want to go over that ground again because we have had that question before. Moving on to Main Gate, John Smith, you have got some questions.

**Q81 John Smith:** The original target date for Main Gate was December 2003 and there have been a few target dates since. What is your current target date for Main Gate and what work will have to be completed to achieve that target? Following on from the earlier discussion are the negotiations with the French having an impact on this?

**Mr Coles:** Let me take the last point concerning the French first. As there is no formal connection with the French, that will not impact on anything because there is nothing we can say about it other than it may be. As to Main Gate, when it is will only be decided when we are confident that we have teased out the relationship between cost, performance and schedule. In other words, when those things are teased out and all joined up and the Alliance partners believe that they can deliver it, and have said so to their own boards—because one of the strengths of the Alliance is that partner companies have to convince their own boards that they can do this, to enter this particular approach—then will we go to Main Gate and confirm that we can deliver this capability with the budget in the time-frame. Therefore, we are not going to say when the main investment decision is going to be made. If we do that we force ourselves to make decisions when we have not derisked the programme, one of the clear tenets of Smart procurement. So I cannot say when, all I can say is it will be when we have teased out the issues. The issues will be: can we deliver the capability for the solution offered for the risks and have our Alliance partners bought into this with the risk and reward that it gives, in CPD's view, coming in at the EP funding which we have got for this particular programme? Until we are there we are not going to say when we are going to Main Gate because if you do that you end up making decisions which are not based upon getting those three parameters in line.

**Q82 John Smith:** I am a great believer in getting things right rather than rushing them, but no ball-park, no guesstimate?

**Mr Coles:** I would be speculating if I said so.

**Q83 John Smith:** Without going into the question of facilities?

**Mr Coles:** No, I would not want to be drawn on anything further than that.

**Q84 John Smith:** So there is no official target date for the main investment decision?

**Mr Coles:** There will not be any official target date for the main investment decision until we are confident that we have teased out the risks, we have agreed on capability, the solution and the price, with our Alliance partners because in this particular case they have to sign up to it as well. It is not just Ministry of Defence, they have to say they can do it, and this time it is four companies doing it, not three, so it is quite a powerful discipline on the system.

**Q85 Chairman:** In January of this year this Committee was told that the Main Gate decision is expected to be taken in the second half of 2005. Is that no longer the case?

**Mr Coles:** The main investment decision I doubt very much will be taken in 2005.

**Q86 John Smith:** A further question. In a previous meeting of the Defence Committee in November 2004 the First Sea Lord said: "We now have 60% design definition, which is higher than any other project." As almost a year has lapsed now what is the current level of design definition of the programme?

**Mr Coles:** The definition of design maturity used, and to which the First Sea Lord may be referring, is the definition about the ability to enter into what we call production engineering. It is not the design being complete. It is an assessment about whether the design is ready to enter into production engineering. If it was 60% then, my judgment is it is not a great deal further on. It is a little further on but not a great deal further on because we have had some value engineering since then which has set it back a little bit. It is not a linear thing. In other words, you do not make six months' progress and you are 5% on. It can take a long time to go from 60 to 70 to 80. In other words, it is not a linear thing. It can be a long time at the same number, if that is helpful.

**Q87 Mr Swayne:** The First Sea Lord also said that the Navy had to have the first ship by 2012. Given that you have told us there is now no target for Main Gate, is he going to be disappointed?

**Mr Coles:** He will only know that when ministers and others have signed up to the final main investment decision, whenever that is, so I cannot answer your question.

**Q88 Mr Swayne:** Is delivery by 2012 still feasible?

**Mr Coles:** It is still the target date for this programme, yes.

**Q89 Mr Swayne:** So when would the Main Gate decision have had to be taken by to be consistent with the delivery of the first ship in 2012?

**Mr Coles:** It does not follow that taking the main investment decision is linearly related to when the in-service date will be. You can be doing a lot of derisking in the assessment phase which actually

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makes the date you are going to deliver it more achievable. In other words, the main investment decision is when you commit your large resources.

**Q90 Mr Swayne:** But that does not invalidate the question as to with what delivery date the decision on Main Gate is consistent. The question therefore remains: in order to deliver the ship by 2012 when will we have to have the Main Gate decision by?

**Mr Coles:** They are not directly related.

**Mr Borrow:** They have got to be.

**Mr Swayne:** There has got to be a cut-off.

**Q91 Mr Breed:** How long does it take to construct a ship?

**Mr Cameron:** We are still in the assessment phase. Since last January, when you have quoted a couple of the remarks that were made, and as my colleague has said earlier on, we have engaged 21 companies that are either shipyard or fabricators in this country. As Tony mentioned earlier on, that is now down to 16 companies who will participate some way or other in the fabrication and shipbuilding aspects of this project. There are 12 other major procurement suppliers that have been engaged since January on the project, suppliers such as Rolls-Royce for power and propulsion and ALSTEC for the weapons handling side of the project, so there is significant industrial engagement across the country taking place on the project and it is a very iterative process, as John just mentioned. However, we are making progress. Sometimes that progress does not have an impact directly on the detailed design or the design maturity, that number that you are talking about, but in other areas significant industry engagement is taking place across the country.

**Q92 Chairman:** Mr Coles, can I bring you back to the question that Desmond Swayne first asked which was because the First Sea Lord said that he was adamant that he wanted this ship in 2012, Desmond Swayne asked if it was still feasible and you said that that remained the target date.

**Mr Coles:** Correct.

**Q93 Chairman:** Which is a different answer to a question that had not been raised in that way.

**Mr Coles:** Until the ship building strategy has been agreed, until we are sure we have the capacity and capability (with all the other constraints I have mentioned) actually nailed down and the Alliance partners have agreed to all that, I cannot confirm what date that would be. We can have a date that we are aiming for. We have to do our best to try and achieve it. We will only agree to the date, whatever that might be, once we go to the main investment decision. To do anything else would set an artificial date and lead to pressures in the system to make decisions in advance of teasing out the risks, which we want to avoid.

**Q94 Mr Jones:** I hear what you are saying and you are very good at avoiding answers, but what advice are you giving to ministers about this then on that in-service date? Is 2012 still feasible? You must have an assessment.

**Mr Coles:** I have a target date which is given to me which is 2012.

**Q95 Mr Jones:** Politicians tend to pull figures and years and delivery dates out of the air. Is it feasible; yes or no?

**Mr Coles:** The answer is I do not know yet because until we have made the Main Gate investment decision, I cannot answer the question. We are seeking to try and achieve it.

**Q96 Mr Havard:** You told us the Main Gate investment decision was not necessarily consistent with the delivery date. You cannot have it both ways.

**Mr Coles:** What I actually said was the data with which you go to Main Gate is not directly related—in other words, if you shift the Main Gate by six weeks it does not mean the ship is out six weeks later. That is what I am saying. They are not directly related.

**Q97 Mr Havard:** They are.

**Mr Coles:** They are related but not directly.

**Q98 Mr Hancock:** Mr Coles, it is a shame that you were not with the Defence Committee when we had three presentations on this. The starting point for each of the presentations on this was the delivery dates to the Royal Navy of the carriers. That was the critical date—2012—and back from that there were a number of critical points on the graph presented to us on three separate occasions as milestones that had to be achieved for that date to be a feasible date, to use your words. We have already gone way past two of the milestones for that and yet you are still sitting there saying that, in your opinion, it is achievable. We were told by the then project leader of the carriers when they presented the case to this Committee that it was critical that these milestones were achieved and that there was a price to pay if any of them were missed for any reason, and the price if you wanted to keep the in-service date of the carrier was an increase in cost. It is a legitimate question for us to ask for you to re-examine the evidence that has already been given to this Committee and tell us whether you now believe that missing those milestones which you obviously have done, and your inability to be able to give us a Main Gate date is going to lead to a significant increase in the cost of this ship or the first ship is going to be very late in delivery to the Royal Navy. If that is the case, we should then ask what the contingencies are within the MoD for keeping the existing carriers in service for longer?

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**Mr Coles:** Well, I will examine what my predecessor has said and perhaps advise you<sup>4</sup> because I do not have his words here of what he actually said.

**Q99 Mr Hancock:** We had a graph. The critical points were all indicated to this Committee and they were crucially important for that delivery date. They were working on the assumption that they were not going to deviate from 2012. Too much hinged on it as far as the Navy was concerned.

**Mr Pryor:** Could I comment and observe on a couple of those issues. I understand the question about this direct linkage with the Main Gate investment decision and the delivery date. This is an innovative working experience for us with the Ministry of Defence and an innovative working experience for the Ministry of Defence with us. It is an Alliance which in its nature is unique but it is designed that we are all of one mind to deliver an affordable carrier programme to the target date. That is what we want to do. As project managers we are looking at every which way we can do that. One aspect where I believe the Ministry of Defence has been criticised in the past is for spending too little time before the Main Gate decision. 15% of assessment funds need to be spent—and we were talking about that—before a Main Gate decision. As a supplier, in the past I have seen Main Gate decisions taken too early when the risk has not been assessed. We, the industrial partners, with the Ministry of Defence are going to be sharing the risk in this and we want to get it right for our own companies and our own percentage risk in the overall deal, therefore we want to spend the assessment monies as recommended by the various bodies and get the investment decision right at the time we want to take it. My observation as to why there is not a fixed date for the investment decision and, as I think one of your colleagues said, if you can get it right it is better than getting it wrong earlier. That is what we want to do. We are still aiming to do everything we want to do to modify the programme and modify the strategy to meet the target date at an affordable budget.

**Chairman:** We are now running really quite late. I am going to move on to the Whole Life Costs. Dai Havard?

**Q100 Mr Havard:** We have been told that the MoD have indicated that the Whole Life costs were £31 billion, £12 billion of which was the acquisition. Is that acquisition figure totally related to the actual carrier?

**Mr Coles:** No, I think the cost for the ship itself is quite a lot less than that, just over a quarter, if I remember correctly.

**Q101 Mr Havard:** That is the proportion and the ship is about a quarter?

**Mr Coles:** We are talking about the ship itself in terms of the cost and its true life cost is actually quite different. If my memory serves me correctly it is about a quarter of the cost or thereabouts to the ship as opposed to the aircraft and everything else that goes with this capability.

**Q102 Mr Havard:** How much is the ship?

**Mr Coles:** I seem to remember, as I said, it is about a quarter and I think we might have put it into the memorandum to you.

**Q103 Mr Havard:** In terms of this calculation you have to deal with about Whole Life Costs, operating costs and all the rest of it, the Alliance did a 100-day review—and that was last March, as I understand it—at that point you said it was still financially viable?

**Mr Coles:** Correct.

**Q104 Mr Havard:** What I want to know is does that mean affordable within the costs that you have been given because there is potentially a difference between these two figures? There is a lot of slippery language about the place and I would like some clarity.

**Mr Coles:** I will try. What the 100-day programme did was it looked at what the industry and ourselves thought this project should cost, and the outcome of that was that although we have yet to tease out the final costs, it can be made compatible with the funding that is available for this project. In other words, we think that the cost that we have in the assessment phase today, what we think this may cost, with some of the changes we would drive in through the Alliance arrangements can be brought in line with the available funding. That is what I mean by the term you used.

**Q105 Mr Havard:** Within that, as I understand it, you give three figures, which are the lowest and the maximum and within it there is a “most likely” figure. You did that assessment after 100 days and it was last March you reported that. Where are we now? Is it still the case that it is still costing that? You have talked about your value engineering process and all the rest of it. I understand you have done that and driven down cost out of that, but that has meant changes in system design and all the rest of it. March to October—where are we now?

**Mr Geoghegan:** What the 100-day committee did was it generated a common cost model so there is a single cost model for this project that is shared by all of the participants. Clearly that is based upon a number of assumptions that have to be validated over time. Clearly there is a range of potential outcomes around each of those. As the project progresses, and in particular as we get more detailed involvement with the shipyards around the ship build strategy and the individual cost inputs for the various sections of the ship, then we would be able to validate these specific aspects. In terms of our view of the cost model, it has

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not changed substantially since the end of the 100 days. Clearly there is still a long way to go and a lot of those assumptions have got to be tried out in great detail with the people who are going to have to commit to them.

**Q106 Mr Havard:** So the whole envelope has not changed and the proportions within it have not changed, so it is still roughly a quarter for the cost of the ship, is it?

**Mr Coles:** In terms of the overall capability of acquiring it, there is no substantial change.

**Chairman:** Thank you very much indeed. We have various questions which we would have liked to ask you about the RAND Corporation report and suggestions arising from the RAND Corporation report but because of time I think it would be best if we write to you and ask if we could have a memorandum on that.<sup>5</sup> Can I say thank you very much indeed, gentlemen, for your evidence to the Committee this morning. I suspect we may be seeing more of each other over the years, which will be an enormous pleasure.

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*Witnesses:* **Mr Tom Burbage**, Executive Vice President and General Manager F-35 JSF Program Lockheed Martin, **Mr Steve Mogford**, Chief Operating Officer, BAE Systems, members of *Team Lockheed*, the Prime Contractor, and **Commodore Simon Henley MBE, RN**, Joint Combat Aircraft Integrated Project Team Leader, Ministry of Defence, examined.

**Q107 Chairman:** I would like to welcome to the Committee Mr Tom Burbage, Executive Vice President and General Manager F-35 Program Lockheed Martin, Mr Steve Mogford, who is the Chief Operating Officer of BAE Systems, and also Commodore Simon Henley. We have a number of questions and I am going to leave it to you, if you do not mind, to decide who should answer these various questions. I wonder if you could begin by updating us on where we are with the Joint Fight Striker programme, how the United Kingdom programme fits with the United States programme, and if you could, in doing so, comment on the suggestion that the Short Take Off and Vertical Landing aspect of the programme has come under question in the United States. If that were the case, what would be the effects upon the British? Who would like to begin?

**Commodore Henley:** If I can start, Chairman, and then I will pass to Tom to comment on the detailed parts of the programme. My job as a team leader in the way that the collaboration is set up for the joint combat aircraft is for me, effectively, to take the Joint Strike Fighter product from the US acquisition system and then integrate that into the UK. That involves a great deal of insight into the evolution and influence into the evolution of the Joint Strike Fighter programme in the US. We have people placed into the US programme to do that. It also then involves understanding what the UK environment is and ensuring that we can take that product and integrate it into the UK, in particular to integrate with our carriers, to integrate with our logistics systems, and to integrate with our command and control systems, so that we can actually operate the aircraft with other UK assets. We have been involved since the outset of the programme. We have been watching very carefully, with an announcement that we are intending to take the STOVL variant and fit that into our carriers to meet our timescales. We saw about two years ago weight growth in the STOVL aircraft which called into question its viability. We clearly were concerned

about that, as were the US, and the US Marine Corps in particular, who are the other main customer for the STOVL variant. We have seen the programme take a pause and take a very good look at the design of the STOVL aircraft to take the weight back out and bring it back to a viable conclusion. At the current stage that work has been examined by the US Defense Acquisitions Board and by the United Kingdom Investment Appraisal Board and we now believe that the STOVL is back in a viable position. There have been some added costs to the US to bring that about. The UK was in fact insulated from that increase in cost because our negotiations for involvement in the programme were on a fixed-cost basis. Perhaps for the detail I could hand over to Mr Burbage.

**Mr Burbage:** Chairman, on the weight issue in the STOVL aeroplane there are probably two concerns that we have, one is technical and the other one is political, because the programme has been going through a quadrennial defence review back in Washington over the last few months, as you are well aware. On the technical side, as the Commodore said, I think we all feel that the weight is stable now and it has been stable for about 18 months. We have good margins to our performance requirements and we feel the aeroplane is on track. It is important to note that the first STOVL airplane is now in build. We have started the assembly of the central fuselage for that airplane and we expect to fly that in the summer of 2007. That is to the production standard, complete with the structural changes that we used to eliminate the weight. We eliminated about 3,000 lbs of real weight from the airplane and we improved our propulsion efficiency by about 700 lbs, so there was a net result of about 3,700 lbs of improvement in the airplane. To the testimony of the US acquisitions system, they did allow us to pause and apply a large engineering team to the project, fix the design, make everything viable again and then re-baseline the programme. That re-baselining of the programme was where the additional cost came in. I will mention, though, that we carry our cost as a total

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programme cost, both development and production, and as we went through the weight redesign we shifted our production programme one year to the right and those residual production dollars were then transferred in to cover the cost of the redesign. So on the bottom line there were no additional dollars handed into the JSF project line. It came out of reshuffling dollars between production and research and development. On the political side we have a quadrennial review process going on now every four years. Congress directs the Secretary of Defense to conduct a detailed review on the alignment of the defence budgets with future strategies. As part of that process every option in the book has been discussed and JFS is a big part of our future budget going forward so, as you might guess, it is a large part of that debate. There have been a number of different options looked at and our best sense right now is that the project is doing quite well in the end game. The results of that are not known yet and they will be reviewed through our Deputy Secretary of Defense up to Secretary Rumsfeld probably by the end of this month or mid-month in November. So we should have a confirmation of that in the very near future.

**Q108 Chairman:** Confirmation of whether the STOVL variant is going ahead in the United States or not?

**Mr Burbage:** I have heard nothing threatening the STOVL version at all lately. The other two variants have been debated but our sense of the situation right now is that all three variants will be carried forward.

**Q109 Chairman:** Thank you. Would a British STOVL version be the same as a United States STOVL version in all respects?

**Mr Burbage:** The UK and the United States co-signed the operational requirements document (the ORD) prior to the contract's award and the UK was part of the decision process that selected our team to build the airplane. The airplanes are identical.

**Q110 Chairman:** Including in their Stealth characteristics?

**Mr Burbage:** Yes. I should defer that to the Commodore. Do you want to comment on that?

**Commodore Henley:** I have nothing to add.

**Q111 Mr Havard:** They are the same Stealth-type characteristics or two different types of Stealth characteristic?

**Mr Burbage:** At the risk of getting technical, Stealth is designed into the airplane in terms of its shape. In terms of its characteristics they are based on the shape of the airplane. The rest of it comes from other techniques, either coatings or management of emissions, and we are not building two different airplanes.

**Q112 Chairman:** What about the international partner version, the version that was designed, I think, in 2003 in relation to having as many common characteristics with the United States aircraft as

possible for sale outside? Are there any differences in that version? There must be presumably if it has got a different name?

**Mr Burbage:** If we go back to the way the programme was constructed, the programme was constructed to be a US/UK combined programme. At the contract award we had no other international partners, just the UK. Subsequent to contract award a government-to-government invitation was extended to a number of other allied countries. Those countries were allowed to participate in the development project and in so doing were allowed to participate industrially also. Those countries now bring their unique requirements into the project and we will deliver airplanes that are responsive to their operational requirements, within the guidelines of the US national disclosure policy. The rest of that is strictly government-to-government, it has nothing to do with the industry side.

**Q113 Chairman:** Okay. With many apologies I will repeat one question just for final confirmation. The US and UK STOVL versions will be identical in all respects, particularly in their Stealth characteristics. Is that correct?

**Commodore Henley:** Could I say I think we can only answer that by saying they share the same requirements.

**Mr Hancock:** That is not an answer, is it. That is unfair to us.

**Chairman:** It is an answer to the question but it is not a complete answer to the question.

**Q114 Robert Key:** May I ask in what respects they are different aircraft?

**Commodore Henley:** I am not aware that they are different in any respect.

**Q115 Robert Key:** But they are not the same?

**Commodore Henley:** I think I answered that by saying I am not aware that they are different in any respect. I am aware of what the United Kingdom has demanded of this aircraft and I am aware that the aircraft that we are buying meets that requirement.

**Q116 Robert Key:** But the requirement is identical because you said the British and American Government signed a document jointly.

**Commodore Henley:** Correct.

**Q117 Robert Key:** So in what respects are they not the same?

**Commodore Henley:** And I said, I am not aware that they are different in any respect.

**Q118 Mr Hancock:** They have a different capability because they are going to do different things. The United States Marine Corps will not fly the plane in the same operational states as the Royal Navy will fly it. So there are different capabilities. We are asking whether the plane itself, the product, is identical when it leaves the factory before it is customised to suit the use?

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**Mr Burbage:** I would argue they are not being built to different capabilities. There was a common requirement constructed by the UK and US together. That common requirement is what we measure the airplane against and deliver the airplane against. There are some differences in UK weapons and US weapons.

**Robert Key:** That is fair enough.

**Q119 Mr Havard:** Can I just apologise for jumping in earlier with a question. You said 70% of Stealth is built into the shape of the thing. What we are trying to tease out from you is that other remaining 30%. Is it then the case you might strap different Stealth things into it after the event than the British might? Is that what we are talking about? Is that why it is different?

**Mr Burbage:** No sir, we do not strap anything into the airplane.

**Q120 Mr Havard:** If the RAF get hold of it, they will.

**Mr Burbage:** The plane is designed to a set of requirements. The requirements are identical for the US and the UK.

**Chairman:** One of the important issues of the aircraft is the technology of the whole thing, not least the Stealth technology. I wonder if we could move on to general information sharing. Kevan Jones?

**Q121 Mr Jones:** Can I say, no, they are not the same and the reason why they are not the same links into this question about information sharing. One of the great concerns that I have got, and I think a lot of people have got, is whether or not this is a completely joint project in terms of information sharing. It is not just Members of this Committee but also the Air Chief Marshal, Sir Jock Stirrup, who in *Aviation Weekly* of 11 July this year, said, "There is clearly a growing urgency in addressing technology access and the related ability of independent support of the aircraft. Whilst Stirrup remained optimistic that the outstanding areas can be satisfactorily addressed, any indication that this is not going to be achieved will result in the UK having to think pretty hard". I was in Washington at the end of July meeting congressmen and also Lockheed and BAE Systems. From BAE Systems' point of view there is a clear problem here. The answer to your question is that they are not same aircraft because there are aspects to the American aircraft which we have not got access to at the moment because of technology transfer issues, even though we have quite happily transferred technology on, for example, Rolls-Royce engines to the US. Where are we at with this? Clearly there will be a groundswell of opinion including from Jock Stirrup, and I for one will be arguing and saying if these points are not addressed I cannot understand why we are buying this aircraft.

**Commodore Henley:** We have a policy of progressive release of information and progressive understanding. We have an agreement signed between the US and the UK at Secretary of State level called "exchange of letters" which lays out the UK's need to be able to operate this aircraft in a

sovereign capability when the aircraft is in service. That is clearly a shared aim between the US and UK and what we have in place is a strategy to turn that from a high-level agreement into the individual technology licences that transfer that piece of information.

**Q122 Mr Jones:** But how are you going to do that?

**Commodore Henley:** We have defined the capabilities that we will require in the UK—and maintenance, repair and upgrade is but one of those—and we understand the technologies that will be needed to underpin that capability. We need to have those under sovereign control. They could either be in government or in the hands of US industry under direct contract with us or they could be in the UK industrial base. We are working with the US Government to understand exactly where that will lie.

**Mr Jones:** The problem, with the greatest of respect, is not the US Government. It is the actual Hill who, frankly, will not agree to the transfer of this technology. Having met some of my counterparts on the Hill, including my dear friend Congressman Hunter, there is no way that this agreement between two governments is going to get through Congress. I say first as a UK taxpayer why should we go into a joint project if we are not going to have people able to access to upgrade. I think it is going to get to the point soon in this country where I will be saying, and I think other people will be saying, why are we going to procure this aircraft if the Americans do not trust us on basic technology. On the stealth phase which is something Mr Key raised, it is quite clear, they are not identical aircraft.

**Q123 Chairman:** I think the Commodore should be allowed to answer that and then John Smith.

**Commodore Henley:** I have to bow to your superior knowledge on the Stealth characteristics because I am not aware—

**Q124 Mr Jones:** It was Lockheed who were briefing me when I was in Washington.

**Commodore Henley:** I think it would be into the realms of speculation as to where we may get. We have made considerable progression with technology exchange. We have laid out to the US Government the path that we need to follow and we are making progress along that path. Beyond that we are in negotiation with the US to achieve our aims.

**Q125 Mr Jones:** I do not question your commitment from a UK point of view but let me quote Jock Stirrup again. He "remains optimistic that outstanding areas can be satisfactorily resolved. Any indication that this is not going to be achieved would result in the UK having to think pretty hard." When are we going to have to start thinking pretty hard on this because, frankly, I came away from Washington in July pretty depressed that any movement had been made on this? If it is not, not only us as a Committee but other people perhaps who have got interests in other aircraft types should be saying to

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the UK Government, clearly if we do not have access to this on a joint basis why should the UK procure this aircraft? I agree with the Air Chief Marshal on this.

**Commodore Henley:** And I brief the Air Chief Marshal fairly regularly. Significant progress has been made.

**Q126 Mr Jones:** He looks not very happy.

**Commodore Henley:** And we have set ourselves some milestones in the future, points at which we measure that achievement and take a judgment. Right now we are making progress and we have made progress in the last few months. The US understand what it is we have to deliver and we are making progress along the line towards delivering it.

**Q127 John Smith:** To help us a bit could you tell us how many requests for technical licences have been requested? How many of those requests have been approved and have we received all the technical information we require from those requests?

**Commodore Henley:** The progress to date on work that has been contracted to be done in the UK on behalf of JSF—and at the moment because we are in a development programme that is what the licence has been there to support—the programme has not been held up for the want of a licence and the subsequent transfer of technology. The issue that is being talked about here is looking ahead into the future as to what is the UK's capability to support this aircraft on sovereign operations. The US licensing process has a time limit issue to it. They will transfer information when it is required. Each individual piece of information has to be defined what that information is, why you need it and when you need it. There is therefore a timeliness issue that we are not going to have this aircraft in service in the United Kingdom before 2012, therefore why do we need the technology transfer now? That is precisely the issue that we have tried to tackle with the exchange of letters, laying out the requirements we have for the aircraft in service, understanding the technology we need to support that and then looking for indications that we are going to get the transfer when we need it.

**Q128 Mr Borrow:** I think we do need to probe specifically about these licences because in every briefing that I have had with BAE Systems over the last 12 months this question of technology transfer has been at the heart of those discussions and the failure of that technology to be transferred. Saying there is a system where it will be transferred when it is needed is not really the answer. What I want to know is, following up John Smith's question, how many requests for information have been made, how many of those requests have been acceded to and on how many occasions when requests have been acceded to has all the information requested been transferred and on how many occasions has inadequate information been transferred. I want the actual figures. If you cannot give those figures now can you make sure—

**Commodore Henley:** We will certainly be able to give you a note on the number of licences that have been processed and passed through.<sup>6</sup> Could I ask Steve to pick that up.

**Mr Mogford:** I think from a BAE Systems' perspective to put it in context, normally when you are dealing with technology assistance agreements like this it tends to be very much on a single issue basis. As Commodore Henley said, with the Joint Strike Fighter programme we have had a progressive succession of licence applications which increase access to technology. I think we would have to give you a note on the specific details on all of the applications for requests there,<sup>6</sup> but generically we have had something like nine series of applications as we have gone through the programme and Commodore Henley is quite correct when he says, as of today, we have had approvals for release of information which allows us to meet the contract obligations. I think also as Commodore Henley said, because we have been testing the system through this progressive stretching of the envelope we have caused the system in the States to be tested in terms of speed of response, but it is fair to say that as of today we have all of the approvals we need to meet the contract.

**Q129 Mr Borrow:** Could I just follow up on that. This is not so much the technology needed to construct the plane now but the technology that will be required for maintenance and possible upgrades. Evidence was given earlier on that decisions had not been made as to how that technology would be available for the UK and whether it would be within the MoD, within a UK company or whether it would remain within a US company contracted to the UK. I would be interested in your comments on my observation that it would go down very badly amongst those constituents of mine who work for BAE Systems if that technology were to remain within a US company and they were not to be allowed to have that technology to be in a position to maintain and upgrade the aircraft in the future.

**Commodore Henley:** If I could perhaps lead off with the response to that, Mr Borrow. We are buying into this programme in a large way to provide an affordable solution for the UK's future needs and part of that affordable solution means that we want to be part of a 3,000-odd aircraft run, not have 150 one-offs in the UK. That means we intend to stay in the joint common configuration with all nations throughout, which means staying as part of the partnership we have at the moment. Therefore, the need for sovereign capability for the UK in the first place falls on the shoulders of Lockheed Martin as the prime for Team JSF. BAE Systems are clearly part of that partnership and are ideally placed then to act as the UK front end of Lockheed Martin's provision of support in the UK. We are in negotiation with both companies at the moment and the US Government to bring that partnership to

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<sup>6</sup> Ev 50

<sup>7</sup> Ev 50

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fruition. How that ends up in terms of the division between government and industry and then the way JSF plays that out between their partner industries is still in negotiation.

**Q130 John Smith:** Chairman, this is pretty fundamental stuff. I can understand the answers regarding the timeliness of technology transfer, as and when it is needed so it does not delay the project unduly. We do not want to see that; we want to see the in-service date met. However, operational sovereignty sounds pretty fundamental to me and not only the employees in BAE Systems, as my colleague rightly pointed out, but also the taxpayers of Britain are clearly going to be concerned. I have to tell you I am concerned if there is any question mark whatsoever over the operational sovereignty and independence we have on the second largest aircraft procurement project in the next decade. I would have thought this was something that should be resolved fairly early on because it will be too damn late when these aircraft are delivered or are in need of upgrade or major overhaul or indeed front-line maintenance and we are not in a position to maintain them. It strikes me as fairly fundamental.

**Commodore Henley:** Mr Smith, I do not think my position would be any different from yours, not least because I wear a uniform and I am responsible for and have been responsible in the past for putting people into these aeroplanes and sending them out. I do not think anybody would say we are going soft or being soft on this approach. We have a strategy in place. I think Mr Burbage would probably turn round and say we have been extremely aggressive. We have some measures of success that we are measuring ourselves against to ensure that we are content with where we are going. That is precisely the briefing and where the Chief of the Air Staff is coming from.

**Q131 Mr Havard:** I have a technical question about the matrix. The Ministry of Defence are saying you are doing this exchange of letters process and that you will jointly develop a UK/US technology matrix which sets this out in a very detailed letter. Is that a one-off shop and is it closed or is it going to be able to continue to be developed as you go, because if it cannot be then clearly these questions about future technology are a closed issue and the concern from us about protectionism from America, call it what you like (and I can go into the political invective if you like) is a question of confidence as to whether that is an open process or whether it is closed. Is the matrix now developed and shut or is that the vehicle you are going to use in order to continue for that to be an open process?

**Commodore Henley:** The technology matrix is in place now and it is the vehicle around which we are conducting discussions at the moment. I do not regard it as closed because, as you say, the nature of the aircraft will change and the technology will change but it is right now the area where we have been able to reduce ourselves, if that is the right word, to a level of detail that allows genuine discussion to take place. When you are up at the high

level it is quite easy to get promises; it is harder to see whether you are going to get real delivery. That is why we spend a great deal of time breaking this down into individual technologies and saying, okay, against this technology are we going to be able to get transfer? We have got to the level where we have been able to discuss at a technology level what the issues are that get in the way when the first look is, no, we are not very happy about that. We are making progress on identifying the stoppers to those technologies and then finding ways to work round those stoppers to get us to the capability that we need. I cannot understate the fact that sovereign capability for this aircraft is the most important aspect.

**Q132 Mr Havard:** You have removed all the stoppers where they have popped up, have you?

**Commodore Henley:** Not all to date but we are working on it and we have made significant progress.

**Chairman:** We regard information sharing as absolutely central to this programme and we will be holding your feet to the fire and I hope you will be holding others' feet to the fire on this very important issue over the next few years. Moving on to production and support for the aircraft, Mike Hancock?

**Q133 Mr Hancock:** Can I ask about the negotiations that are going on at the present time, which we were led to believe are taking place, with regard to the production and sustainment phases of the Fighter. How sure are we that we are going to meet the dates you gave for December 2006 for a memorandum to be signed on that?

**Commodore Henley:** The memorandum that is under negotiation at the moment is a nine-nation memorandum and the time-line for it is driven by the US requirement to have the partner nations on board before the US Government then commits to the first low-rate initial production phase. Their commitment is roughly January 2007 and therefore the target date for negotiations is December 2006. We have had two formal negotiation sessions to date and at the moment there are no indications that we will not meet that 2006 time-line.

**Q134 Mr Hancock:** You must have done a risk analysis of what the risk would be if that date was not met regarding the UK's capability.

**Commodore Henley:** It depends on what the knock-on effect is into the US programme. If the US decided that the nations had not signed up but they would still authorise the first batch of low-rate initial production aircraft, which are only US aircraft, then the impact on us would be small. If it then knocked on to the whole programme then there would be clear implications for us.

**Q135 Mr Hancock:** If the US do not get all the partners on board, what are the implications for us? Not having a plane?

**Mr Burbage:** The UK airplane is the same as the US Marine Corps airplane. The only partner that is even looking at a STOVL airplane today is Italy and that

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is about 18 airplanes so they are very minor player in the STOVl configuration. The partners represent a block of airplanes that potentially could be between 600 and 700 aeroplanes for all seven of the partner countries, not counting the US and the UK. The US buy alone is of the order of about 2,500 airplanes so on a relative scale it is about a third as between the US and UK airplanes, so it is significant in terms of fly away cost, in terms of annual production rates and total quantities, but it really is not significant to the configuration or to the early production lots. The first two lots are US only. The third production lot is when the UK planes enter. There are a couple of international test airplanes in the third and fourth lots. The rest of the international airplanes are further out.

**Q136 Mr Hancock:** It will not have an effect. So what can the UK expect to have in the way of build work and maintenance on these aircraft?

**Mr Burbage:** This gets down to trying to capitalise on the economies of commonality and scale. There is going to be a global support solution in place to maintain—

**Q137 Mr Hancock:** So we might repair the American Marine Corps aeroplanes?

**Mr Burbage:** Quite possibly yes, sir.

**Q138 Mr Hancock:** You answer the question.

**Mr Burbage:** The plan is to put in an affordable and efficient support structure. Where partner countries want to have additional capability to that, that comes at their cost. Remember, the US/UK is part of a baseline programme so if additional international partners want to add to infrastructure that comes at their cost if it is not part of the baseline.

**Q139 Mr Hancock:** But we are the only level 1 partner you have got so we must be entitled as of right to part of the build and some guarantee of the maintenance, surely? What are British taxpayers getting out of this?

**Commodore Henley:** This is not a work-share programme. One of the things Joint Strike Fighter did to break the cost spiral of future aircraft was to say we would not be entering on the basis of work share. What we get for our level 1 partnership is that the UK requirements are embodied in the major contract. What we have got into the UK is because of the competitiveness, particularly of BAE Systems but other companies as well notably Rolls-Royce and Smith's, a significant amount of work, not on a work-share basis but on a global best value basis. They have been the best companies to deliver that into the programme. The result is to date for development and the low-rate initial production runs the UK is getting about \$6.75 billion-worth of work back for our \$2 billion investment.

**Q140 Mr Hancock:** Does this agreement allow these planes that will be acquired solely by the UK to be wholly maintained in the UK?

**Commodore Henley:** We intend to maintain the aircraft at whole aircraft level, ie at the aeroplane level in the UK. It would be pointless and very expensive to set up the entire supply chain in the UK, so where the manufacturer of a particular component is somewhere other than the UK and the reliability is such that we do not have a great deal of through-put we are not intending specifically in the UK to pick that up. So it is a value-for-money case.

**Mr Burbage:** It might be important to add that the STOVl lift is done by Rolls-Royce, the cockpit ejection seat is done by Martin Baker, and the flight equipment is done by Beaufort. There is a large part of this airplane that will be done in the UK and those suppliers will be the lifetime maintainers of the equipment they provide.

**Chairman:** We will now move on to the weight reduction as you have already mentioned. Robert Key?

**Q141 Robert Key:** Now the decision has been taken to change the bring-back of the characteristics of the aircraft and the reduction in weight will be achieved by having one 1,000 lb bomb not two; does that have an impact on the operational performance of the aircraft?

**Commodore Henley:** The requirement for the UK, if I could just clarify is actually one 1,000 lb bomb either side. The original requirement for the UK was just that. There was a requirement for the UK aircraft (and the requirement document laid it out) that we would have a 1,000 lb weapon either side so we could carry two 1,000 lb bombs. At one stage in the programme we believed that we had enough spare capacity in the STOVl aircraft to move towards a common weapons bay with the other variants, which has a 2,000 lb capacity weapon bay. That is not the same as saying you can fit two 1,000 lb bombs. It means you can fit a single 2,000 lb class weapon. The UK does not have any 2,000 lb class weapons in its inventory, which is why a 1,000 lb class weapon was being deemed suitable. As part of the weight reduction studies we did we reverted to the original design and therefore, no, there has been no impact on the UK requirements of that change.

**Q142 Robert Key:** But a reduction in the size of the bomb bay implies that you are going to put the 1,000 lb bomb in the bomb bay, so that is how you achieved your reduction in weight, or one of the ways?

**Commodore Henley:** No, the 1,000 lb weaponry was always going to go in the bomb bay. What we have done is to shrink the weapons bay in the aeroplane which has freed up space in the aeroplane to put other equipment and we have redistributed it so that we could get a more efficient design into the aircraft and that in turn knocks on into the weight issue.

**Q143 Robert Key:** So are there any more risks that you are anticipating you are going to have to tackle?

**Commodore Henley:** There are risks out there and it would be foolish at this stage in the development programme to say there are not. Clearly we are keeping a very good eye on the propulsion of the lift

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system. We do have engines up and running. We have got over 3,500 hours of testing under our belts now on the engine, and we have roughly 500 hours on the STOVL propulsion system, so we know we can run the whole system. We need to understand what happens when you install that in the aircraft. Some of those tests are coming out. There is still the risk that aircraft do grow in development as you find things. That is what development is about. You have to add bits back into the aircraft. We have an allowance for that weight growth which is based on historic norms and with this programme with the weight management that is in place already we expect to stay well within those norms and right now our target is based around expecting those norms. If something, though, came out of the woodwork that we were not expecting, clearly that is still a risk. We have very good UK Government subject matter experts based in the key areas of the programme in the US to understand those risks.

**Q144 Robert Key:** Commodore, will the UK be acquiring an aircraft that meets all the Key User Requirements?

**Commodore Henley:** At the moment we do not anticipate any difficulty with meeting Key User Requirements. That one that is under threat, which we set in the first place, was the 450-foot ski-jump launch with a full weapon load. At the moment we are close to that but with the current CVF design that does not impact on the operability of the aircraft. That requirement was set some time back before we knew what the CVF design looked like.

**Robert Key:** Thank you, Commodore.

**Q145 Mr Hancock:** Does the weight reduction and keeping the weapon level to a useable size mean that the range of the aircraft is reduced because you are taking fuel capacity out of the aircraft, in other words you reduce the weight so you do not need so much fuel. These aircraft are flying out of aircraft carriers and they might have some distance to fly and return safely, so I want to know if the weight shift has downgraded the capability of the aircraft to deliver what we want?

**Commodore Henley:** The whole of the weight reduction process was taking a holistic view as to all the requirements of the aircraft. There is a Key User Requirement to set a minimum range for the aircraft. As we took the weight out of the aircraft and occasionally we impacted on fuel volume then we looked at other ways of getting that fuel volume back in. You can do things such as reduce drag on the aircraft which means you need less fuel to go the same distance. With an aircraft of this sort of design and with the design capabilities that are inherent in the modern design process, then you can play tunes, if you like. What we have ended up with at the end of the weight reduction process is a balanced design that meets our main requirements and gives us our required payload and bring back payload.

**Chairman:** Thank you very much indeed. Thank you for all the evidence you have given us this morning. Once again, this is something on which we will definitely need to come back to you but we are most grateful to you.

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## Tuesday 25 October 2005

Members present:

Mr James Arbuthnot, in the Chair

Mr David S Borrow  
Mr Colin Breed  
Mr Derek Conway  
Mr David Crausby  
Linda Gilroy  
Mr David Hamilton

Mr Mike Hancock  
Mr Dai Havard  
Mr Kevan Jones  
Robert Key  
John Smith  
Mr Desmond Swayne

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*Witnesses:* **Lord Drayson**, a Member of the House of Lords, Minister for Defence Procurement, and **Sir Peter Spencer KCB ADC**, Chief of Defence Procurement, Ministry of Defence, examined.

**Q146 Chairman:** May I welcome everyone to the Committee and begin by apologising for the space constraints. One of the problems has been that the Committee itself has increased from 11 to 14, which means that this end has got bigger and you have been squeezed and I apologise for that. The rooms in Portcullis House are themselves rather over-subscribed, but we will try and address this as we go through the next few weeks. Minister and CDP, welcome to the Committee. It is very good to see you. We took some evidence last week from the industrial partners on the Carrier and the Joint Strike Fighter. I wonder whether we could possibly begin by focusing on the Main Gate decision that will decide when the investment decision is going to be made. In the beginning there may be other issues that you wish to cover, but I would like our questions to be as brief as possible and I would also like that your answers could be as succinct as possible, although from time to time you will need to go into detail. The original target we were told was December 2003 for the Main Gate decision. In January this year this Committee was told that the Main Gate decision was expected to be taken in the second half of 2005. Last week we were told that there was no current expectation of when that Main Gate decision was going to be taken but that it was unlikely to be this year. What target date for a Main Gate decision are you working towards? Do you actually have a target date?

**Lord Drayson:** Chairman, what I have is a clear appreciation of the importance with a project as complex and as far reaching in its implications for the maritime industry in this country that the Main Gate decision is taken when we really do know with confidence the risks that are involved in building these carriers and, importantly, the implications and the way in which these carriers are built for the longer-term situation on shipbuilding. Given the intimate relationship between the building of these Carriers and the future capacity which we have in this country, the interaction between this Carrier project and our other shipbuilding projects, it is so important that when we pass the Main Gate investment decision we have got clarity over the timescale and cost and the risks. What I am doing as Minister in coming in to this Department is to ensure that that decision, when taken, does properly

determine the answers to those questions, which can then give us confidence on the long-term delivery, cost and performance of these ships when built.

**Q147 Chairman:** Would you say that you had no target date?

**Lord Drayson:** My view is that the ideal would be for this Main Gate decision to be taken as soon as possible, subject to it meeting the criteria which I have described. I do not want to see the Main Gate decision taken before we have the answers to these questions to a level of confidence which means that the answers to questions on cost and time and risk are really understood.

**Q148 Chairman:** So from the sound of things, if I may delicately press you, the answer is yes, you would say that there is no target date as such. There is a target of clarity that you need rather than a target date.

**Lord Drayson:** In my experience of managing projects over 20-odd years it is very important that the disciplines that any organisation uses to manage projects are clear and set out the principles under which decisions will be taken to commit to projects and the level of risk that in this case the Ministry of Defence takes in doing so. I think I would want to say very firmly to the Committee that I am looking to see this decision being taken as soon as possible. The reasons for that are the fundamental importance of the Carrier projects to our Forces in the defence strategy which we have set out in the Strategic Defence Review and the equally great importance of this project to the shipbuilding industry in this country. I am well aware that the sooner we make the decision on the Carriers the better for both the Navy and for the shipbuilding industry. However, this decision to go through Main Gate must be taken when we are clear about the answers to these questions. The reason why in this particular project this is challenging is because these ships are so large that they will involve multiple shipyards to build them. They will also involve multiple industrial companies who own these shipyards working together in a way which has never been done before in this country. If we do this right we have a real opportunity to help the shipbuilding industry in this country to evolve in a direction which will be suitable for the long-term needs of this

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country and to be globally competitive. The importance of getting this interaction between the Carrier project and our long-term Maritime Industrial Strategy is key.

**Q149 Chairman:** But all of this was true in January of this year when we had a target date.

**Lord Drayson:** That is absolutely right. I am committed to making sure that as much effort as possible is put into reaching this Main Gate decision, subject to it meeting the criteria which I wish to see that this Main Gate decision fulfils in the context of the long-term strategy which we have to have for the maritime industry in the UK.

**Q150 Chairman:** What has changed since January of this year, not in terms that you have changed the target date but that we no longer have one? What is the main factor that has caused the delay in the Main Gate decision?

**Lord Drayson:** We are working towards meeting our Main Gate as quickly as possible. What we are also doing is really grasping the nettle of building these Carriers in a way which will facilitate the long-term health of this industry. What has happened since January is that as we have worked on the Alliance structure for these Carrier projects we are building the prototype for the long-term structure of shipbuilding in this country. If we get this Carrier project right we will put shipbuilding on a strong footing for the evolution in the future. What has changed this year is a lot of work has gone in to understanding the characteristics of the changes that have to take place both within the industry itself and in terms of the engineering challenges of building these ships. Because we are going through an Alliance approach—and I would be happy to explain to the Committee if you wish more details about this—we are asking the potential participants, ie the companies coming into this Alliance, to sign up to a commitment in terms of the cost, risk and timescale in a way that has not been done before. A lot of the work which in the past would have been done later in a project is being done now and has been taking place over this year. I can appreciate the concern that it seems that failure to pass a Main Gate seems that the project is being delayed. However, I feel that this approach is in the long-term interests of this project, the long-term interests of the Navy and of getting the industry to reshape in a way which will be healthy for us over the next 20 years.

**Q151 Mr Jones:** I am a bit confused by last week's answer. In last week's evidence Mr Coles said, "I have a target date which was given to me which is 2012." How rigid is that? You are saying you want to fit into an overall maritime strategy, which I agree with. If this is delayed much longer some of that capacity is going to go bust, is it not?

**Lord Drayson:** As I have said, I absolutely recognise the fundamental importance of these Carriers to the Navy in the future and I understand the importance in terms of timing. I note the target dates the Department has set itself in the past. However, as Minister I reserve the right to set the in-service date

of these ships once these Main Gate decisions have been properly bottomed out. I think it is important for the long-term development of our industrial base and projects such as these that we have really clear disciplines about things such as in-service dates, costs of projects and that we make sure the principles which we have set for the Department in terms of making sure that enough investment goes into the assessment of these projects—and the guidance is well established, it is up to 15%—is met.

**Q152 Mr Jones:** I see this as very significant and well done to you. I think we should put up a plaque up in this room to acknowledge that someone at the MoD has admitted that these were fictitious figures for in-service dates we have had in the past. I am not sure whether you will last very long in the MoD if you continue to do this.

**Lord Drayson:** My experience in business in terms of management of projects is that the only way to manage projects successfully is to set out a framework that people who are managing those projects understand and also that the people who are relying on those projects to be delivered, the Defence Committee, understand and that that in the long term is stuck to. Then we have a framework which, in terms of accountability, in terms of the interface of all of these projects to the successful defence of their country, can be managed as well as possible. This discipline is not something which I am introducing from scratch. This is building upon a lot of work which has been done in the past and I think that we are making some significant progress within the Department. I will give you one clear example of that. It has been recognised for some time in the Department that the lack of a clear Defence Industrial Strategy has dogged our ability to make decisions on projects within an overall framework. This has been worked on within the Department for some considerable time.

**Q153 Chairman:** I think as a Committee we will probably need to come back to you in relation to the Defence Industrial Strategy, Minister, because that is such a large subject that we could well move on to that and spend the rest of the morning on that.

**Lord Drayson:** Within the Defence Industrial Strategy, which I have committed to deliver by Christmas, it will have the Maritime Industrial Strategy. The Maritime Industrial Strategy has to dovetail with the Carrier project because the Carrier project is so important.

**Q154 Linda Gilroy:** Minister, Kevan has just referred to the worries that I think are in a lot of shipyards about retention problems the longer the delay and the uncertainty goes on. In the March 2004 RAND report which your Department commissioned on "*The United Kingdom's Naval Shipbuilding Industrial Base—the next fifteen years*", years they noted that it was going to be busier for naval shipbuilding than has been seen recently. Indeed, I think they said that the current shipbuilding plan of the MoD will be a challenge to the industry resources available in the UK and the

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overlap of several programmes in the next few years will result in a high demand for labour and facilities and that any potential shortfalls could result in cost increases and unscheduled delays. I wonder if you can share with the Committee what your current assessment is of whether the UK industry has the resources and if there are specific gaps which relate to what you were just saying and what we are looking at in terms of the on-going delays in coming to the Main Gate decision.

**Lord Drayson:** I believe the answer is the work which has been done over the past year on the Carrier project. In the context of all of the other projects which we are doing now and which we envisage doing in future, you are absolutely right to say that the level of war shipbuilding that this country is planning to undertake over the next ten years is the greatest which has been seen for a very long time. These two Carriers will be the largest ships we have ever built. What this means is that there is a challenge to make sure that the way the capacity is used of the whole programme is done in an efficient manner from two respects. We need to make sure that we find a new way of getting different yards within the country to work together such that the resources are pooled to enable more things to be done at once as we will require, but we also need to see that the yards make investments to improve the overall standard of efficiency and skills in the long term, such that at the end of these we have an industry which is more efficient and more effective than it is now. I think we have a tremendous opportunity if we get this right to encourage the industry, in the context of a long-term framework setting out the interfaces between these different projects, to make investment decisions. That requires the MoD to stick to a plan and to be more open about a long-term plan than it has hitherto been able to do. It also requires industry to step up to that challenge and to make the investment in skills and capital equipment to deliver the cost savings which we need to see over the long term to maintain an efficient war shipbuilding capacity in this country.

**Q155 Linda Gilroy:** The RAND report referred to huge spikes in demand for certain types of skill and also for a capacity starting within the next year or two and running on to 2016. I hear what you say about perhaps this having long-term consequences for how we do shipbuilding in the UK, but how can you both plan for the long term and also ensure that for this particular project we are capable of meeting the peaks in the demand for certain skills where there are gaps? What discussions have you had with the Sector Skills Council to feed into the Defence Industrial Strategy announcement which you are going to be making later this year?

**Lord Drayson:** It is clear that we will need to increase capacity in certain areas. What we will have to do is make sure that we make the best use of the capacity which we already have distributed around yards that we have in the country and make sure that we use the best facilities. What we are looking to do, as one person described it to me, is to put together a

“fantasy football team” of resources to be able to deliver these projects. That is a good way of thinking about it. What would be wrong would be for us not to plan this properly such that we increase capacity in short-term peaks but which was not sustainable in the long term. What we need to see is that we put together a framework which meets the requirements in the short term and which is sustainable in the long term.

**Q156 Linda Gilroy:** Are you confident that industry can respond to that over the period of the Carrier programme given that the report said there are certain points at which the demands of the Carrier programme and the MARS programme will require up to a doubling in certain very specific skills gaps that appear to exist at the moment?

**Lord Drayson:** We should not under-estimate the challenge that this presents not just to industry but also to the Ministry of Defence. That is why it is very important that this Alliance approach which is taken on the Carrier project does work and it is important that the way in which the participants, the companies and the MoD sign up to this is on the basis that this is going to be the structure under which this transformation is going to take place. It is going to be difficult for us to do this because these are companies which normally compete and they compete hammer and tongs very successfully. In the Department over the last six months I have seen that there is a realisation across the industry. I have had many discussions both with industry and with the unions when I have been to yards and talked to people at different levels within the yards. There is a realisation that things have to change and I think that that gives me the greatest level of confidence that we will be able to do this.

**Q157 Mr Hancock:** In your introductory remarks to the question the Chairman asked on the Main Gate you suggested that part of the delay was about bottoming out the risks and fully understanding what the risks were in this contract. I would be interested to know whether to date you are satisfied that you can overcome those risks in the foreseeable future, ie in the next three or four months, and that all of the risks can be overcome by using only British industry?

**Lord Drayson:** I would just add one further point. It is not only that we identify what these risks are but that we agree who is taking responsibility for making sure these risks do not actually materialise and that is the hard thing. In the past, with more conventional structures which have been put in place, it has not been clear as to where the risk has come down in the end. What we are aiming to do here is to set up a structure whereby a lot of work is done upfront to identify these risks and then to set responsibility for meeting them but within a general principle that the success of the Alliance is down to the whole team being successful in meeting those risks and not just passing the buck around within the team. That is important to get right. In terms of my level of confidence, I can answer that question to the Committee with confidence when I have signed off

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on the Main Gate decision. I am encouraged by the amount of effort and commitment that have been shown both by the MoD and by industry to really work on this. There is more work that needs to be done. We are not there yet.

**Q158 Mr Hancock:** Are you satisfied that all of the risk can be satisfied within the UK?

**Lord Drayson:** I am sorry, I do not understand what you are asking.

**Q159 Mr Hancock:** On the work that is needed to be done, one of the risks you identified was the co-operation that was needed and the effort that would have to be put in against competing resources etc. Are you satisfied that the risks that you are looking at can be overcome by simply maintaining the construction of these ships wholly within the UK?

**Lord Drayson:** The current work which is being done looking at managing these risks is on the basis of these ships being built in the UK.

**Q160 Chairman:** Minister, you made some interesting comments just now about the in-service date and you said you reserve the right absolutely as the Minister to decide on the in-service date when you have made the Main Gate decision. I think that was what you said. Does that mean that you no longer regard 2012 as in any way a date set in stone for the first Carrier?

**Lord Drayson:** All I can say, Chairman, is that I have noted the target date which the Department has set itself in the past. However, given the importance of this project in the context of how I have described, the in-service date must be set on the basis of the Main Gate decision, on the criterion which I have set and I reserve to set that date when I know what that is.

**Q161 Chairman:** So the date is no longer set at 2012?

**Lord Drayson:** I reserve the right as the Minister to set the in-service date on the basis of the Main Gate decision, when we take that decision.

**Q162 Chairman:** And you have not yet set it?

**Lord Drayson:** I have not had a submission to my satisfaction on the Main Gate.

**Q163 Mr Havard:** We have been told previously that the in-service date was 2012. Although the decision about the Main Gate and the decision about the design manufacture may be delaying things, the plan was not to prejudice the in-service date. We were told that if there were delays—and there have been in these first two stages of the Main Gate and design manufacture—that would not prejudice that in-service date. You seem to be suggesting now that three things are under review and that at some point or another you will use the decision of confidence to allow you to move to those three stages but that they are not artificially set by 2012. Is that right?

**Lord Drayson:** I think it is important that the Department sticks to the discipline of setting an in-service date for a project such as this many years out which is based upon a proper understanding of the

risks and the costs and the implications which that has in terms of the wider interface of this project with other projects and so forth.

**Q164 Chairman:** That in-service date was set as 2012.

**Sir Peter Spencer:** In the context of the way in which these projects are independently audited by the National Audit Office we do not formally set the dates until we make the main investment decision at Main Gate. What has been a source of confusion is the status of dates which were stated publicly at an earlier stage in the programme before we had finished the assessment phase. In terms of the principles of Smart Acquisition, we have made it very clear that the dates by which the Department will be held accountable are those which are set at the Main Gate. Indeed this Committee last year recommended that we should not reveal dates prematurely. Now we recognise that problem. We are certainly not doing it with other programmes, but there is a bit of history to this project which we need to deal with in the right sort of way. From my perspective, the support that I am getting ministerially to ensure that we do mature these decisions properly and get a really robust understanding of the performance time, the cost and risk is fundamental. Interestingly enough, as the Minister mentioned earlier, industry is equally concerned to get this right because they have got more skin in this game because of the form of contracting which we are entering into.

**Q165 Mr Jones:** The Minister has made himself very clear to me. This is the first time ever anyone has come before this Committee from the MoD and been honest, frankly, in terms of their replies. What you are trying to do now, Sir Peter, is weave it back to your Civil Service speak.

**Sir Peter Spencer:** That was not my point.

**Q166 Mr Jones:** Why do you not do what the Minister has just done and be honest with us instead of this fantasy figure you keep coming up with?

**Sir Peter Spencer:** I merely cited the history of how this date came into the public domain and I pointed out that the basis on which we are audited in terms of performance is the date which is announced when the main capital investment decision is made, a point which we have not quite arrived at, which is precisely the point the Minister is making.

**Q167 Mr Jones:** Last week Mr Coles said 2012 was the target date.

**Sir Peter Spencer:** The Department has to have some basis—

**Q168 Mr Jones:** The Minister said something different which I agree with.

**Sir Peter Spencer:** Clearly plans iterate over time and you have to have something as a basis for planning in an informal sense and that is the basis on which all of the rest of the Department looks at it. These get iterated over time and the final decision is

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made at the Main Gate and then we set those plans in concrete. That is very clear. That is precisely what the Minister has said.

**Q169 Linda Gilroy:** I want to go back to the relevance of the Defence Industrial Strategy to the Main Gate decision. At a RUSI conference on 12 September, Minister, you said, “By December, we will not be able to cover all the sectors to the same depth, and there will be an element of ongoing work. But I am demanding gritty conclusions on shipbuilding and ship support . . . ” Are you confident that when you come to those conclusions you will be in a position for Main Gate to go ahead in the way that you have described and that you are well aware of the importance of that to the issues of uncertainty in the dockyards?

**Lord Drayson:** I am confident the Defence Industrial Strategy will be delivered in December. It will contain within it the Maritime Industrial Strategy which will provide a framework to enable decisions to be taken. I must say that the way in which the Ministry of Defence have responded to get this Defence Industrial Strategy done by December has been admirable.

**Q170 Robert Key:** Minister, Mr Coles told us last week that the British and French governments have been discussing the project for the past couple of years. Can I ask you when you or any other ministers have met French ministers to discuss this project?

**Lord Drayson:** I have met French officials from the DGA to discuss this project at several periods during the summer.

**Q171 Robert Key:** Sir Peter, have you also met officials to discuss this?

**Sir Peter Spencer:** Yes, I have.

**Q172 Robert Key:** When do you expect the French to come to a decision on this? We were told last week that probably December is the sort of time when the French will finally decide whether they are going to get involved. Is that your understanding, Minister?

**Lord Drayson:** That is a matter for the French, but that is the understanding. Whether or not that is a definite date I think is a matter for the French, but that is my general understanding, yes.

**Q173 Robert Key:** You have been very clear with us this morning that there must be multiple usage of shipyards in order to construct these enormous ships. Presumably that would include French shipyards if the arrangement is concluded with them. It is also true that it was the Ministry of Defence in June this year who suggested to the French that maybe a third each of the three ships should be made in the UK and France and that the final assembly would be in their respective countries. Is that right?

**Lord Drayson:** There are some important principles which within the Department we have set out in terms of the way in which this potential work jointly with the French should be done. The first is that it must not negatively impact the British project. We

are in the position of having a design for the ships and it may be that our decision is suitable for the French need. That is for the French to determine. It is very important that the way in which this potential working together is managed does not prejudice our work. At the same time, I think we should be open to opportunities to see if it is possible through this joint working to garner some benefits, either benefits in terms of cost or benefits in terms of timescale. One of the things which the Department has learnt over the years is the importance when looking at this type of joint working with other international partners, that it is the industrial partners who drive the work to explore possible solutions, not that it is done from a political direction. So this is another very important principle which has been adopted in this project.

**Q174 Robert Key:** The French have suggested that there is about 85% commonality between the French and British requirements, but then there is the thorny issue of what happens to the equipment and the subsystems that go on at the final stages here and whether the French would actually be needing completely different requirements for a completely different aircraft. Surely that would affect the original design of the aircraft Carrier itself. After all, you have had all the problems of weight with the JSF as well. Have you discussed at that sort of level of detail how this might work?

**Lord Drayson:** My understanding is that discussions have taken place relating to the suitability of the British design for French need and that there is clarity over the level of commonality in the design. I am sure Sir Peter can go into more detail for you if you wish. It is very important for there to be an understanding as to what areas of difference would be required by the French and that there are solutions put in place to meet those differences without prejudicing the British project.

**Q175 Robert Key:** Sir Peter, I wonder if you could respond to what the Minister said and tell us a little more detail.

**Sir Peter Spencer:** This is clearly a decision for France to take. They have had access to sufficient detail of the CVF design to form their own judgment as to what changes they would have to implement to that basic design at their own expense in order to make it meet their own purposes. The reason why this is even feasible, of course, is because we are designing the Carrier to be adaptable throughout its long planned life and therefore it has much bigger design margins than would have been the case in, say, the current class of CVS. We have answered a number of quite detailed questions in terms of what it is we do and why and made it clear that we will not countenance anything which will do any damage to the timescale of our programme or do anything to adversely affect risk and cost as well.

**Q176 Robert Key:** The MoD put out a statement saying you would not let French involvement “hold up our plans”. I am still anxious about when this cut-off date is going to happen. If the French do not come up with a decision in December, how long will you give them?

**Lord Drayson:** I have asked the question of the project team whether or not they are satisfied that the discussions which are taking place on the potential of joint working with the French are prejudicing the British project. The answer I have been given is that they are not. I would expect to be informed if we were getting towards a position where it was beginning to.

**Sir Peter Spencer:** The crucial test here, as the Minister said earlier, is that industry has to believe that this is worthwhile doing and that there are benefits which they could obtain as well. So there is no intention whatsoever to stuff this down industry’s throat.

**Q177 Chairman:** Sir Peter, you said you would not allow the French to hold up your timetable. What is your timetable?

**Sir Peter Spencer:** I have got nothing to add to what the Minister said earlier.

**Q178 Mr Borrow:** At last week’s evidence session we were told that there was a range of possibilities for French involvement in the project. Could you outline what those possibilities are?

**Lord Drayson:** Where we are at the moment is that the industry partners are looking at the alternative options. There are a range of different options which we are expecting them to come forward with, but it is up to industry on both sides to come up with a proposal which we find acceptable or not, it really is down to industry and not for us to prejudge or give direction to industry. I think this is one of the key lessons. We have seen projects in the past which have been done through international collaboration and which have been very successful and they have been successful because the industrial partners were left to get on to decide what is the most effective way to do the collaboration and to identify areas of joint working. That is the way in which we are doing this project and we need to stick to that principle.

**Q179 Mr Borrow:** Would it be fair to say that the range of possibilities that were mentioned last week are a range of possibilities that are being discussed by the industry and which at government level there is very little knowledge of? Is that an accurate reflection?

**Lord Drayson:** It is important for industry to come up with a proposal that industry is happy with which can then go to the Government to approve or not. We are waiting for industry to come up with proposals. This is an iterative process; this is not something which is a one-time event. We do not have, as it stands at present, a proposal on the table which is satisfactory and it is up to industry to come up with those plans. It is important for industry to decide that they have a plan which they regard as workable for us to then look at.

**Q180 Mr Borrow:** Finally, would you just touch on French involvement in the project which I can see from a cost point of view could be an advantage. Certainly in terms of the in-service costs that would be a very positive thing. Given that we have already heard this morning how immensely complicated and difficult this whole project is and how many players there are involved and what difficulties there are from capacity constraints within British shipbuilding, is it not really a step too far to complicate the project further by risking involving another partner in this project at this stage?

**Lord Drayson:** I think you make a very good point. I think that we need to have real clarity about whether or not such joint working actually does affect the risks of the project. Commonsense would tell us that there are going to be opportunities in building three ships which may not be available to us in building two ships. However, history also tells us that international collaborative defence projects can go seriously wrong, not always but quite often and therefore we need to make sure, because of the importance of this project to the United Kingdom’s defence posture, to the United Kingdom’s maritime shipbuilding industry, that any potential joint working which is done on the French Carrier is done in a way which is consistent with the needs which we have. I think it is important for us to explore properly and to put all of our efforts in to making sure that we have explored them and I hope that we do find a way of doing this which enables us to realise some benefits. I do not think we should close our mind to it but I think we should have a very firm view of where it gets into the zone of actually negatively impacting the performance of our project.

**Q181 Mr Havard:** We had a memorandum in May 2003 that talked about industry-to-industry being the driver and said that at Ministerial level this was understood and there may be projects that came forward. We have had the Alliance structure established for the Carrier. Is the Carrier basically the first and the best example of one of the ways of doing this and so there will be other projects in the future? Is that essentially where we are? Is that the context in which it operates?

**Lord Drayson:** I think the context in which it operates is that the Alliance structure on the carrier is a first step in the evolution of future maritime shipbuilding, the shipbuilding industry within the UK. I think because of the importance of the carrier project, the size of the project, the effect on so many yards and so forth, it is really worthwhile using that project as the foundation upon which the industry evolution takes place. Carriers are very important projects but so are Astute submarines and Type 45s; there are a number of projects coming forward. It is not that we intend applying this Alliance principle on other projects; we are not saying that. What we are saying is that because the carrier project creates the possibility of this foundation, getting industry together in this Alliance structure is the right way of getting this project moving forward to enable us to move from that to this further evolution of the

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industry, and I would hope if it is done right that it enables industry in the future to work in a more collaborative fashion on projects.

**Chairman:** Can we move on to the Alliance Structure now? David Crausby, Vice Chairman.

**Q182 Mr Crausby:** Thank you, Chairman. It may be our own fault but the Committee is still unclear as to what the exact roles of the individual Alliance partners are. Can you set out in reasonably clear terms what the role of each of the partners is because clearly they come from very different standpoints—the main contractors, the MoD and the Physical Integrator?

**Lord Drayson:** Yes. When it became clear that the nature of the project was going to require the resources and capabilities of multiple yards to come together to do this, and that this was going to provide the long-term work framework for the longer-term evolution of the industry, the importance of the Alliance structure in both allowing the industrial participants to sign up to contracts, which set out clearly the responsibilities in terms of parts of the work related to the Carriers and the interface between the various parties and the risk that each party is taking on, in the context of all share the success or failure of the project. And within that the role of the Physical Integrator and the role of the MoD, both as Alliance partners, is that the risk of the project overrunning or being over in terms of cost is shared by all, but before signing up to it each of the Alliance partners has clarity on the risks that they are taking within their chunk of the work that they are doing, and that is therefore negotiated, it is put into contract and then when signed it really gives us the best chance of having a greater degree of the clarity of the risks, certainty that they will be properly managed, who has the responsibility for managing them and where the accountability lies for each of these risks. Therefore, the joint working, such that the Alliance structure encourages people not once they are in the project to spend weeks arguing about decisions—because everybody loses if that happens—but once they have signed up to the Alliance everybody is motivated to get on with it and take decisions quickly and efficiently because in that way the success of the project is likely to be ensured. I think this is an important point in terms of the Alliance structure for the long-term delivery of this project.

**Q183 Mr Crausby:** Can you tell us more about the role of the Physical Integrator? Has that been bottomed out now? Because in May of last year, we were advised that just a few loose ends needed to be tied up from the point of view of the Alliance, and yet in our meeting last week we got the impression that it was a bit more than a few loose ends needed tidying up and we are some distance away. What we would like to know is when will all of these loose ends completely and absolutely come together?

**Lord Drayson:** There are a number of areas where the role of the Physical Integrator has been vital to this. The first is in facilitating the discussions that need to take place between parties who are normally

competing with each other, to actually get around the table to reach agreement on the various elements of the project; that is number one. Number two is to actually bring some outside perspective in terms of other experience in other industries. Things such as this alliancing approach have been used successfully in areas outside of shipbuilding and the Physical Integrator brings experience of that. It also brings experience in other types of major construction work, such as oilrigs, as an example. The other thing which is important is that it brings with it a responsibility from the integration of the joint working in terms of the project management approaches. I know from my own experience as an engineer and working in manufacturing, things such as the project management system, the computer aided design system, the tools which the engineers from the different yards use to communicate with each other effectively to build these very large ships are vitally important. Therefore, it is very valuable having a Physical Integrator doing that and—and we have been doing this over the past year—the value of that has already been shown in what we have seen coming out of the work that has been done to date, for example the output of the 100-day review. Do you have anything to add to that, Sir Peter?

**Sir Peter Spencer:** Yes, if I may. *Mea culpa* because I made the statement last year that, in good faith at that time, our understanding was that there was agreement on a large majority of the detail but there were some loose ends to clear up. Those loose ends turned out to be much more fundamental than I had understood them to be at the time. One of them was the agreement on the use of an Integrator, the need to reinforce the Alliance, and that took time to negotiate through with our Alliance partners; but we are through it because there is now general acknowledgement that what has been brought to this project by the introduction of the sort of skills and expertise that Lord Drayson has just described to you has been hugely beneficial, and they have produced a serious degree of challenge, which was needed because the cost targets of this programme are so demanding for the capability that is being sought. But I did go on to say that in order to de-risk the supply side—because it is not just a question of getting the technology risks properly understood and properly managed—we had to have absolute clarity on the detail and clear understanding of the principles and the processes at the CEO level in all parties, and that is what we have been working to do. When you look at what has been happening, because risk is not transferred but is shared, because we all win or lose together, there is much more of a due diligence process going on by all members of the Alliance to make certain that they do really understand this proposition, because there is not the scope that there would have been in a more conventional contract for that risk and cost increase simply to be handed back to the Ministry of Defence. That is the key to all this. We have meanwhile been maturing the design stage and doing more during the assessment phase than we would have originally been doing in a different sort of

programme. It is that detail of the design and the understanding of the design which has enabled us to feel progressively, in some cases, less comfortable about aspects of cost which we thought we would have understood and now we are understanding even better, and it is absolutely imperative now that we conclude this due diligence process so that when we commit to the target cost, when we understand the roles and responsibilities which are still being discussed in commercially sensitive meetings between the partners, that everybody is doing this for the overall benefit of the Alliance, not trying to manipulate it in a way which is simply for the benefit of an individual player.

**Q184 Mr Crausby:** It will be two years in January since we decided that the Alliance would be set up and KBR were appointed in February of this year. So can you tell us when all of these agreements will be finalised?

**Sir Peter Spencer:** The answer is the same as you were given by Lord Drayson earlier. We are closing down on these agreements but I cannot set an artificial timeline. This is a question of consensus. It is in everybody's interests to get on with it as soon as possible and that is what we are doing, but being hung out to dry by picking a date at this stage and then trying to undermine the process does not work here. It is not different from what would go on in an Alliance programme of this sort in the commercial sector.

**Lord Drayson:** Chairman, may I say very briefly, that at the point we make the main investment decision these contracts must all be signed. Everyone who is a member of the Alliance has to have got itself satisfied through the due diligence which Sir Peter has described, and has signed up to it on the basis that it feels that it is entering the Alliance in a way which can deliver the terms which it needs to provide to its shareholders, which is consistent with the long-term strategy of the company, and which enables it to feel comfortable and motivated to be a part of this project and to deliver the delivery date, to deliver the delivery cost and the performance which we sign up to at the Main Gate.

**Q185 Mr Breed:** Minister, as I understand it, in this Alliance the MoD will be both a member and a client. So the first question is: how does the MoD manage the obvious conflict of interests? Secondly, how can it separate the inevitable risks, which, as I understand it, is the principal thing which needs to be got right before Main Gate? So how is the MoD going to apportion the potential risks between client and membership of the Alliance?

**Lord Drayson:** You have highlighted a very clear problem which exists in all defence projects, which is in terms of the role that the MoD has. The reality of the role that the MoD has is that whether it is with an Alliance structure or not the MoD has that conflict of interest. What the Alliance structure does is manage it properly. The companies can only deliver these ships to the project plan if the Ministry of Defence keeps up its end of the contract. It actually puts the Ministry of Defence into the

relationship with the other partners such that there really is a joint contract which both sides are bound to, which motivates both sides when the going gets tough, as it always does on these complex projects, and to sit down together and quickly and efficiently make the decision to resolve them. So it is a recognition of that potential conflict which exists and it is a mechanism for managing it.

**Q186 Mr Breed:** What is the advantage, therefore, of being a member of the Alliance?

**Lord Drayson:** The advantage is that it enables us to work in a way which gives the best chance of efficient decision-making, management of risk to bring the projects in on time and to budget, because of the motivation that that provides for all concerned in the project to do so. This is why negotiating these Alliance contracts is tough because you are dealing with those issues upfront. What we would expect to see, if you are successful in negotiating those contracts upfront, getting them in place, is that it does ease the process of actually moving through the project because the incentive is there to take decisions efficiently, and that is one of the things which we have learned from the past.

**Q187 Chairman:** Sir Peter, you wanted to add something?

**Sir Peter Spencer:** The benefit to the Ministry of Defence being in an Alliance, as we have learned from examples in other industries such as oil and gas, is that instead of the supply chain being incentivised to want to bring delay and dislocation-type costs and expect us to pick up those additional costs, is that the way in which the project contingency also serves as the earned profit. Everybody is now motivated not to put their hands in that contingency because if there is a member of the Alliance who wants to bring some *force majeure* claim with exaggerated details of how much it has cost—which is the problem that has been endemic in all sorts of prime contracting with other industrial areas in a conventional context—that sort of behaviour is by peer group pressure unlikely to happen, because all you will be doing then is taking money out of that contingency pot, which will reduce the levels of earned profit that everybody in the Alliance will take, including the MoD as the client because it will be a reduction in our costs. In other words, we incentivise people to solve problems in the most efficient way, which is not what conventional prime contracting against a fixed price will do for you.

**Q188 Mr Hancock:** May I first of all apologise to both of you? Unfortunately I have to leave just before 12 as I am chairing in Westminster Hall. Minister, you have used the word "clarity" eight times so far today, and I think it is a very interesting use of words because I think it needs some clarity here. The current published In-Service Dates, Sir Peter, for the first Carrier was 2012, Joint Strike Fighter 2014, the second Carrier 2015. Now, we did not invent those dates, they came from the Secretary of State, both the current one and the previous one.

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So all of those dates emanated, for clarity, from the MoD. If they are not achieved then we have some problems, do we not? What do we do about the run-on of the current aircraft carriers, *Illustrious* in particular? *Sea Harrier* runs out in March 2006. With delays on this, are we really suggesting that the fleet will have no proper air defence for the best part of a decade? And are the real issues about the Alliance related simply to industrial issues or are they related to the size of the carrier, the type and the size of the number of planes that they are going to fly off it, because I think they are the ones on which we need some clarity?

**Lord Drayson:** I do not believe we have any issues in terms of the type and size of planes which will fly off the Carriers. I think we have clarity in terms of the interface between the introduction of the Joint Strike Fighter. We must make sure that the design of the Joint Strike Fighter meets the design of the carrier, in terms that the planes have to work off the carrier. When I visited our current carrier I saw for myself the way in which the carrier strike works as a system, and it is very important that the whole thing is designed as a system to make sure that it can meet the requirements that it needs to meet in operations. One of the good things in terms of the way in which this is being planned is that several of the principles we are going to employ on the new carriers and the new aircraft which will fly in them are being tested today with our Carrier Strike Force. So I think we can have a reasonable degree of confidence that there will not be any issue relating to the interface between the aircraft and the ships.

**Q189 Mr Hancock:** I would be interested, Sir Peter, about your views about how the MoD are going to finance the issues raised by the delay in this programme.

**Sir Peter Spencer:** As with other programmes we would deal with that as and when the circumstances arose, in terms of the roles of the parties on the operating cost budget.

**Q190 Mr Hancock:** Is that one of the risks that is being analysed at the present time, that if this programme does not deliver the first carrier in 2012 and the Joint Strike Fighter in 2014 the Ministry of Defence are working out a strategy to cover that risk?

**Sir Peter Spencer:** There will be coherence in the overall package of carrier strike.

**Q191 Mr Hancock:** Is coherence the same as clarity on that point?

**Sir Peter Spencer:** Yes, because it means that we will factor in when the dates are formally set. We will then reassess the programme issues relating to the current assets and make whatever adjustments might prove to be necessary.

**Q192 Mr Hancock:** In last week's evidence we had this, I think slightly unfortunate, quote from one of the witnesses who said that the Alliance partners would "sink or swim together" on this project, and that really does back up what the Minister said, does

it not? What happens if the Alliance does sink in the early stages? How are we planning to keep this programme going if the Alliance does not deliver in the early stages?

**Sir Peter Spencer:** The interesting thing about an Alliance structure is that in the unlikely circumstances that the Alliance collapsed we still have works contracts in place which will actually build the carrier. You would then reconsider your options, should you so need, as to who was actually going to be in the driving seat in that arrangement. But we do not plan to do that and there is no reason for us to do that as long as we do the right amount of due diligence upfront.

**Q193 Mr Hancock:** So what is the last outstanding issue that is causing delay in the agreement on the Alliance being signed?

**Sir Peter Spencer:** I do not think that I can discuss publicly the detail of commercially sensitive discussions, but clearly, as far as the members of the Alliance are concerned, they are now taking a look at the performance time, cost and risk relationships; they are working out for themselves who is going to be best placed to do certain aspects of this programme, and there will be a negotiation which we complete as to what those roles and responsibilities are going to be and a negotiation in terms of the amount of risk and reward that individual members of the Alliance will wish to take out, and all of that will hinge upon us converging on the target cost, which would put the centre of the Alliance in such a way as there is the right balance of challenge so that we will reward industry and ourselves by gain sharing the benefits of beating that target cost.

**Q194 Mr Hancock:** There must be a date in your own mind by which that Agreement for the Alliance to sign up to has to be achieved, because if it goes on for much longer there is a serious problem in industry in this country having no confidence in what is going on. If we are going to use this model for future developments—and as the Minister rightly said, if it works we ought to—I think we now have to start to say that there has to be an end gain here, Sir Peter, and I would be interested, as would the Committee and Parliament, to know when you expect that to be. On the signing of the Agreement for the Alliance?

**Lord Drayson:** Chairman, it may be that I can be helpful here. I think that we as a country, along with a number of other countries, are recognising the fundamental challenge of affordability of a number of large defence projects, whether it is fast jets, submarines, aircraft carriers. All countries face the issue that the level of inflation that is taking place in defence projects and just the overall cost of platforms is raising questions of affordability. Therefore, there is a recognition within the industry here in the United Kingdom, and within the Ministry of Defence, that we have to jointly address these issues of affordability through more efficient working. For industry to be able to make the investment in shipbuilding, to become more

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efficient, it has to have visibility about the longer-term projects; it has to know how often we are going to be ordering certain types of ships and submarines. If we can provide industry with that then it puts the onus on industry to make those investment decisions. The Alliance structure is one way of enabling these discussions to take place to address fundamental issues of affordability and investment in the long-term. I hope that I have not given the Committee the impression that I feeling alliancing is the answer to everything—it absolutely is not; it is one tool in the project management toolbox—but it is, we believe, particularly appropriate to the carrier projects at this time. It does not mean that we are going to use it on everything. There are projects where straight competition is the right way to do it. However, we do need to see that investment takes place within the shipyards in the United Kingdom to improve the affordability in the future of this type of ship, because we need to be able to buy these types of ships in the future, and I am encouraged that that realisation is taking place. It is important for us from the MoD to create an environment where both investors in companies and the companies themselves can see that they can make good long-term profits to sustain their businesses within this framework, and this is what we are aiming to do.

**Chairman:** Moving on to the shipbuilding strategy, Kevan Jones.

**Q195 Mr Jones:** First of all, can I say, Chairman, that it is very refreshing to have a Minister before us who actually knows what he is talking about. Clearly somebody made a mistake in the appointment! I have to say that I have enjoyed listening to you this morning. Can I say just one thing to you? Make sure that you do not go native within the MoD, because if you carry on as you are doing clearly we might get some answers that we all ask for, and actually get a better policy. Can I turn to shipbuilding strategy? In January 2003 four shipyards were mentioned for potential work from the Carrier programme: Govan, Vosper Thornycroft, Swan Hunter and Babcock. Are those four yards still designated as yards that will get work from the carrier programme?

**Lord Drayson:** We have not signed the contracts; we are in negotiations with a number of yards, and therefore we are talking with a number of yards about the various aspects of the shipbuilding, as you have described. But we have not signed contracts with any of them yet, so therefore I cannot say whether a particular yard is or is not in the deal.

**Q196 Mr Jones:** Can I probe a bit further in that? You mentioned earlier on, you used the term that putting the partners together is a bit like “fantasy football” and, when I play, you usually try and get the best players in the team; you certainly would not pick a player that has one leg, for example. So in terms of Swan Hunter, with its current problems on the landing support ships, is it realistic that you are going to include Swan Hunter in this build probe?

**Lord Drayson:** As I have said, we have not signed any contracts; we have not made any decisions. It is true that we have had problems relating to the build of ships at Swan Hunter in terms that they are late, and that is something on which we are working very hard within the Ministry of Defence, with the shipyard, to address. I think the best message I can say about this—not specific to Swan Hunter or any yard—is that, as you describe in fantasy football, you want to put together the best possible team. The good thing about the carrier project is that the carriers are so large that they actually require the capacity of this country to build them. Nonetheless, for the carrier project to be successful it is important that the performance of everyone in the team is up to the mark, and certainly the message I would send to the yards in this country is that we certainly have world class shipbuilders in this country and we need to see that the standard of work on the projects is improved as we go forward because it needs to address the fundamental affordability, and that is what we are going to be looking for from the Alliance partners coming on board with the carrier project.

**Q197 Mr Hamilton:** I am still trying to go over the part where we talk in terms of if we get it right it will put shipbuilding on a sure footing. I am trying to marry that with the fact that you immediately turn around and say that 2012 is not now a date that we tried to work on. When you talk in terms of what you have to do, in last week’s evidence session we were told that the carriers would be built in the UK. However, we were also told that two of the 18 shipyards that you talked to had gone bust. I am going to marry two questions together, Chair, because it makes sense. When you talk about delay in the Main Gate, how is that affecting the shipyards involved in the construction of the carrier? I know that you have not given the contracts out yet but there is work being done at the present time. So how is that having a roll-on effect of these continued delays that we are seeing at the present time?

**Lord Drayson:** I am very mindful that the yards around the country need to have the earliest possible decision on the carrier project for the reasons I have described earlier. Nonetheless, when we take the decision it has to be a decision based upon clarity and definition of the risks and the responsibilities of which we have spoken. I think it is important for me to state that it is for the management of the yards to manage their business in an effective way; the Ministry of Defence is not responsible for the management of these yards. But the Ministry of Defence is responsible for creating an environment within the United Kingdom within which shipbuilding can prosper and investment can take place, and that is why we are putting the effort into the maritime industrial strategy to actually set out, with greater clarity, a framework for the yards to enable those decisions to be taking place. But I do not think you can get away from the challenge which both sides have, which is that until we can get definition on the relative elements of the Alliance within the carriers we are not in a position to go

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forward. That actually puts some pressure on the industrial participants, the yards themselves to get on with the discussions which we are having. It also puts pressure on the Ministry of Defence to get on with it because of the real need to deliver these carriers to the Navy. So interests are aligned to come together to get this done. There is no dispute as to the urgency that there is to conclude the Main Gate decision to be able to move on with the build of these carriers.

**Q198 Mr Hamilton:** Minister, I worked in an industry with 100s of 1000s of people and that industry is virtually non-existent now. If you lose the skills-base, which the industry that I worked in, the coal industry, has now done, and if you ever wanted to expand the coal industry—and that is another debate—you have effectively lost the skills-base within the UK. The timeframe which you are working within is very, very short, but you have already extended that period of time. How realistic is it that you are asking private contractors for shipyards to be able to retain a workforce, which has to be necessary to carry out the work that needs to be done, and at the same time you do not have a strategic plan and framework to work within, because that is another issue you are still trying to work with? That requires a cross-party discussion, a cross-party agreement, if you want to talk in terms of a five, ten, 20-year programme of defence expenditure. How realistic is that?

**Lord Drayson:** It is realistic. I have seen for myself, and for example one particular yard I visited this summer, where the Managing Director of the yard said to me, “You can ask anyone in this yard what the delivery date is for this vessel, and they will tell you, because this yard really understands the fundamental importance of delivering this vessel to the Ministry of Defence on time.” And I tested it out. There was one 20-year old apprentice doing an amazing piece of welding, and I asked him, “When is the delivery date for this vessel?” And he knew it. There is an example where that yard had understood from the top to the bottom the need to address issues of training and investment and to deliver affordability in the long-term. The fact that we have committed, as a Ministry, to deliver the industry with a strategic plan by Christmas, we know—because we are talking to the industry, we are talking to the unions, we are talking to the yards—that that will give them the framework to enable them to make the decisions that they need to make. We have committed to doing that and we are on track to deliver it. That is why I have the level of confidence, both in what I have seen from talking to people, but the fact that the Ministry of Defence is on track to deliver the strategic plan.

**Q199 Mr Hamilton:** With all due respect, you are not on track to deliver that; you will not know that until the end of this year, the beginning of next year, until you get a strategic plan in operation, because the delay factor has already knocked these issues back. I made a point of being involved with big industry. I negotiated contracts on behalf of 2,000 people. The

important thing at my level, that I can work at, is how we retain a workforce at a time when you know that long-term investment has to be put in. The two have to marry very, very quickly, and I would imagine that by December, when the report comes out, that will be the start of another long debate.

**Lord Drayson:** Chairman, I think it is important for me to stress that this maritime strategy that is being developed now is being developed in consultation with industry, with the yards, with the unions, with the companies concerned. This is not something which the Ministry of Defence is going to publish and which everyone is then going to sit down and start debating. This is a process which has been going on for some time. The Secretary of State has charged me to get this done by Christmas and I intend to get it done by Christmas, but it is being done by consultation, and therefore the yards are going through a process with us of discussing these key elements within the strategic plan.

**Chairman:** We are beginning to run over time a little. Desmond Swayne.

**Q200 Mr Swayne:** Will the demonstration and manufacture contract be for one or two ships?

**Lord Drayson:** The demonstration and manufacture contract for one or two . . . I am sorry, I do not really understand this.

**Q201 Mr Swayne:** When the contract is let for the demonstration and manufacture will it be for one ship or for two ships?

**Lord Drayson:** You are asking me, basically, are we intending to build one carrier or two carriers?

**Q202 Mr Swayne:** Is it the same contract or are there going to be two separate ones?

**Lord Drayson:** I am sorry for being a bit slow on the uptake here. The intention is for us to build two carriers; that is what we require. We are moving forward on the basis of two carriers. In terms of the elements of the contract within those two carriers there may be differences in terms of the Alliance contracts for each carrier, but that does not mean to say that there is a lack of commitment to two carriers as opposed to one. But in terms of the fact that we need to manage the capacity, the time delay between the first carrier and the second carrier, in terms of the peaks and troughs, the interface with other projects, it is very important to get it right. So it may be necessary for us to have separate contracts for each ship within an overarching structure for both ships. That is a complicated answer to your question but I want to make sure that I am giving the Committee clarity. The intention is for us to build two ships but to build two ships in the most efficient manner, taking into account the maritime strategy. The details of those contracts are being negotiated at the moment. It may be that it is better to actually structure them as two separate sets; it may be that it can be done as one set but that has not been determined at the moment.

**Q203 Mr Swayne:** What will be the contractual arrangements between the Ministry of Defence and the other Alliance partners and the shipyards? For example, how will those contractual arrangements and the transfer of risk be affected by the Ministry of Defence retaining the decision-making power over the allocation of work between shipyards?

**Lord Drayson:** I think that the principle of the Alliance structure is that in going into the Alliance negotiations there is a negotiation about responsibility for the various proportions of work, at the blocks of work that come together to create the ships. The Ministry of Defence shares the risk because the Ministry of Defence is an Alliance partner. The Ministry of Defence is also in a sense chairing this from the point of making sure that there is a fantasy football team coming together to do this. So that is the way in which that process of decision is on the allocation of work. It has to be done on the basis that the Ministry of Defence is satisfied with it; it has to be done on the basis that all of the Alliance partners are satisfied with it, for the Alliance contract to be signed.

**Q204 Mr Breed:** Minister, in the context of the Ministry of Defence submission that the Whole Life Costs for the carrier strike capability is going to cost something like £31 billion, of which part of that is acquisition costs of approximately £12 billion, what are the estimated costs for the acquisition of the two carriers at this moment in time within that sort of framework?

**Lord Drayson:** The decision that we are going to take on the Main Gate, as well as setting the timescale, is going to set the costs for the carriers. So when we sign the contracts for the Alliance, because the Alliance structure is going to be what is going to deliver the project, it is also going to be the contracts under which the participants sign up for the delivery price for the carriers. So that will be determined at the Main Gate decision.

**Q205 Mr Breed:** Is that cost going to have to be contained within the current equipment programme or will other programmes have to be cancelled or modified in order to make way for it?

**Lord Drayson:** We need to ensure that in the management of the overall equipment programme that the cost that we are signing up for, as part of the Alliance, is one that meets the equipment programme which we have.

**Q206 Mr Breed:** If, God forbid, with all this work that is being done in de-risking and everything else, there is the unusual possibility that the costs might increase, at what point might it be considered that the whole project is unaffordable?

**Lord Drayson:** You can certainly envisage hypothetically a wide range of scenarios in terms of speed of cost increase and so forth. I think it is important for us to make sure that we go into this project on the basis that we do have clarity over the risks and responsibility, and that we have managed them such that we do not go over in terms of cost. That is a challenge for the whole of the defence

procurement area within the department that I have responsibility for; it is not unique to carriers. Because of the pressure that we have in terms of the significant needs across a wide range of a number of projects it is important for us to deliver our projects on time and to cost in all cases. That is a challenge for us to do in the current environment which you have, as I described earlier, and that is something which we need to improve. We have made good progress on that but there is further work that needs to be done.

**Q207 Mr Breed:** But the risks are obviously somewhat greater because of the size of this particular project and its other bits around it, in terms of the total budget of the Ministry of Defence's procurement.

**Sir Peter Spencer:** That is the whole point of alliancing, is it not? That you set your target cost with much greater confidence and everybody who is involved is trying to beat it as opposed to trying to come back to deal with you with claims of additional costs. That is why we have been so careful through the 100-day review, to take a really good look at this with newly introduced, new challenging, probing questions from KBR, as the Physical Integrator, and to take a look at some of the assumptions that had formed the basis of costing up to that point, and to recognise that the performance, time and cost element of Smart Acquisition has to be done vigorously at all stages in the programme and especially when you come up to that main investment decision. That is a very important part of the work that we have been doing. All of our experience is that projects that put enough intellectual effort at the front end, do enough due diligence at the front end, in the main create a successful outcome. Too many projects claim bad luck where they have just not spent enough time at this very important foundation stage, and this is what this is about.

**Q208 Mr Havard:** A very short question. Defence Industrial Strategy, December. Presumably at that point maybe the Alliance is set up, maybe a Main Gate decision—we were told it was going to be roughly about December. Is that we are seeing? So should we be coming back in March and asking you to come back in March and then perhaps we will get an answer to 2012 or whenever?

**Lord Drayson:** I am always very happy to come back and talk to this Committee.

**Q209 Chairman:** I think we should move on to the Joint Combat Aircraft. This is not going to be a difficult question at all. We used to call this Joint Strike Fighter, we now call it Joint Combat Aircraft; is that correct?

**Lord Drayson:** Yes, that is correct.

**Chairman:** Starting with what might or might not be happening in the United States, David Crausby.

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**Q210 Mr Crausby:** There appear to be worries in the US about cutbacks in Joint Strike Fighters. Senator Carl Levin for instance has said that the Joint Strike Fighter is likely to be trimmed back. So how concerned are you about these reports?

**Lord Drayson:** It is something which we are watching very carefully indeed. We are having regular communications on this subject, both with the Embassy and with our partners, with whom we are working on on the project. In terms of the requirement which the United Kingdom has for the Short Take Off and Vertical Landing aircraft, we believe that the Short Take Off and Vertical Landing aircraft, given its vital importance to the US Marine Corps, is not under threat, but we are watching this very carefully indeed.

**Q211 Mr Crausby:** What would the alternatives be? It clearly must be a possibility that the STOVL could be cut back. I know that that is not at all in your control when we consider the number of aeroplanes that we are going to buy in relation to the whole contract. If the Americans choose not to go ahead with STOVL then where are we? What would the alternatives be to that?

**Lord Drayson:** A decision was taken some time ago to join the American programme for this fighter, and the programme which we are now working on is one through a process where we will be buying aircraft from this international programme. It is therefore important to us that this programme continues. In terms of a plan B, if there is a decision taken not to go forward with the aircraft which we require, i.e. the STOVL aircraft, then we will have to look at those plan B alternatives. I do not think it is appropriate for me to go into what plan B is. We do not believe that we need to do that. We are looking at this very closely and for the reasons which I have described we think that the Short Take Off and Vertical Landing aircraft is one which will be continued with; but, as I have said, we are watching the situation very closely.

**Q212 Mr Crausby:** Lockheed Martin last week mentioned the Quadrennial Defence Review that is due to report at the end of the month. Today's Defence News reports that British defence officials are worried that the Pentagon's Quadrennial Defence Review could affect their plans. Are you worried? Is there a risk?

**Lord Drayson:** This is an American programme which we had decided some time ago to buy into. Therefore, if there is a decision taken to stop the programme or cancel elements of it that would affect us, yes, and we would be concerned about that; and we are monitoring the situation very closely. This is an important programme for us; we are monitoring it closely. Our assessment of it at the present time is that we do not believe that it is likely to negatively impact on the STOVL aircraft.

**Q213 Mr Crausby:** Back to plan B, I suppose there could be two plan Bs. One, would we continue with STOVL with a different alternative—F-18, for instance? Or would we want to consider the design

of the carrier itself if we abandon STOVL? Is the abandonment of STOVL on the cards in the event of the Americans not producing that version in Joint Strike Fighter?

**Lord Drayson:** I really do not think it is appropriate for me to get into talking about hypothetical solutions which we might put in place to circumstances when we are not presented with those circumstances today. We anticipate, we expect that the JCA aircraft in its STOVL version will go forward on the basis that we have signed into the project in terms of the rate of development. We are satisfied actually in the way in which the aircraft is progressing to date, and so we are not in a position today where we are so concerned that we are putting contingency plans in place. We are monitoring it very closely but I do not think it is appropriate for us to be getting into a consideration of what the fallback alternative needs to be. We are not there yet and we do not anticipate being there.

**Q214 Chairman:** Would you agree with the proposition that if the United States did abandon or change its intentions in relation to the STOVL version of this aircraft it would cause us quite serious concerns?

**Lord Drayson:** Yes.

**Sir Peter Spencer:** May I add a comment, Mr Chairman? We can only make the assumption that the STOVL programme is going to go ahead for the time being; it is not our place publicly to try to second-guess the United States' government decisions. But QDRs are a pretty regular thing and any programme which has large spend is being looked at, so all of the big programmes in the United States are being looked at. But it is a fact, as this Committee knows, that in view of the longevity of these ships the fundamental design has been put into place so that we could, under extreme circumstances, implement the design as a more conventional aircraft carrier. So there are options which will enable the carrier strike still to be delivered, but they would not be as good as the current plan, which is why we intend to stick with it.

**Lord Drayson:** Perhaps I could also add, in terms of addressing the concerns, that there are scenarios which are being talked about in terms of the shape of the future programme in the context of future defence reviews, which maybe advantageous to us in terms of the mix of aircraft and so forth. So we should not assume that necessarily the QDR is going to lead to a negative outcome for us. It may not affect it, it may lead to a more positive outcome and we are monitoring it very closely. But we are not in the position at the moment of having to implement any kind of plan B.

**Chairman:** Of course, this is all speculation. Robert Key.

**Q215 Robert Key:** Sir Peter, will the UK variant of the JCA be identical to the US STOVL variant in both design and performance?

**Sir Peter Spencer:** I think you had answers on this last week in terms of the differences in the potential of its weapon fit to make it UK-specific. In terms of

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the baseline design, as you heard Tom Burbage tell you, we are working to the same joint operational requirement document. Therefore, we will get the performance for which we have contracted.

**Q216 Robert Key:** Will the stealth features be identical? We were not quite clear about that at the end of last week's session.

**Sir Peter Spencer:** I am not in a position to speculate on sensitive aspects of technology in the public place, other than to say on the basis of our contractual arrangements with the United States we know that our requirements are being designed for this programme. We are not aware of any different requirements that the United States might have, and as we are working from the same joint operational requirement document I think the speculation is groundless.

**Q217 Robert Key:** Do you think there is any chance that the French would buy into the JCA?

**Sir Peter Spencer:** You would have to ask the French government.

**Q218 Robert Key:** But what is your take on that?

**Sir Peter Spencer:** I have no opinion on that.

**Q219 Mr Borrow:** One of the troubling aspects of this particular project has been the transfer of information and technology from the US to UK companies. Minister, I wonder what discussions you have had personally with members of the US administration on this problem and also other players within the United States who will have an interest on this transfer?

**Lord Drayson:** I have had conversations with members of the United States' administration and I have had conversations with members of the industrial partners relevant to this project, and I have stressed the importance to the United Kingdom of issues around technology transfer, the way in which that affects long-term operability of the aircraft for us, and the fact that this is an aircraft which will be in service for some considerable time and the effect that issues of technology transfer have on our ability to upgrade the aircraft in the future. My understanding of the position we are in at the moment is that we are not short of any information at the present time which is adversely affecting the project. The concern that we have is that in the relatively near future we are going to need to see the transfer of information and intellectual property for us to see our needs in the long-term to be met. So it is important that those things take place and we are making that point very clear. I would also like to add that it is important for us to recognise that we have entered into this programme, buying this particular aircraft to benefit from the huge quantities of aircraft which are going to be produced. The cost savings for us, both in terms of initial acquisition costs and the long-term support, are very significant because thousands of these aircraft are going to be built and pooling the need to the United States with us and with other countries, and we need to be mindful of being very clear as to what aspects of

long-term support and upgrade are peculiar to the United Kingdom's need, strategically, because that is going to have an adverse effect in terms of long-term overall support, in terms of not being able to benefit from the cost savings. So we need to have a balance to this. I think this whole area of technology transfer within this particular programme is one which is also shared with other programmes, but I think it probably becomes most important over the next year or so.

**Q220 Mr Borrow:** On that point, you have confirmed what the Committee was told last week, which was that significant progress had been made in the last few months in terms of technology and information transfer. But, looking ahead, what is the strategy of the department and our government in terms of ensuring that we meet the challenges for technology transfer in the months ahead? Is there a clear strategy to ensure that it happens?

**Lord Drayson:** Yes, there is a clear strategy and that strategy is to be mindful in looking at the project plan, as the project progresses, where certain lumps of technology transfer need to take place and at what point, and to have clear visibility—if you like, it is a sort of trigger to make sure that we are clear when those technology transfer points need to take place in the programme consistent with our long-term plan—and to have a very close eye on that, and if that is starting to slip to be expressing our concern on the specifics. It is moving from a general concern to one where we will have a specific concern on certain triggers if it does not take place. We have not got there yet but we have a clear plan to know when we do get there.

**Q221 Mr Jones:** I am interested in the plan because I was in Washington at the end of July talking about this very same subject, and I accept that there are quite good relationships obviously between the two governments and at government level they are very good. But the issue here is not actually about government is it, it is about Congress itself? There are some very key individuals there who, from my meetings with them in July, including breakfast with Duncan Hunter, will not actually allow this technology transfer thing to go through Congress. So what is actually being done in terms of not just talking to government but also trying to tackle the issue around Congress? I know last week we talked about the sovereignty into the use of this, but the biggest concern I have is not in this programme but in terms of your industrial strategy, where does it fit? Because in future, if we are not careful, we are going to be in a situation whereby technology will go one way but it will not come the other way, and I think that is going to be important not just on this project but other projects as well, if we are going to do joint projects as you said we are going to.

**Lord Drayson:** Chairman, I think you make a very good point. In my experience, working in industry it is very important for us to recognise that the process of innovation which takes place, over a number of cycles of technology, needs to be maintained in the long-term. The fact that we entered into this project

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with the Americans on this fighter, not on the basis of work share but on the basis that the best companies with the best know-how would get the work, the fact that British companies have a far greater proportion of the work than you would have otherwise expected on the basis of our numbers of aircraft, actually shows how strong the UK companies are today. We need to make sure that as we go forward technology transfer which is taken, for example in terms of the lift fan which is the thing that makes the STOVL aircraft work, that the relationship we have with the United States in the long-term ensures that the intellectual property base in this country is refreshed, maintained, such that in future programmes we still have industry which wins on the basis of this performance. That is something of which I am very mindful and something which I am looking to strengthen in terms of our overall intellectual property strategy with the Department, and taking this longer-term view of how we make sure in our international collaborations that over the cycles of equipment we do maintain that knowledge base.

**Q222 Mr Jones:** I actually agree with you on that, but can I ask what work is being done to ensure that it happens? Because clearly in terms of this project there are problems still, and talking to some Congressmen quite clearly—even though they make nice-sounding noises about “our best ally” and everything else like that—what is actually needed is possibly a treaty which covers not just this project but a whole range, in terms of what you were just talking about, Minister, of technology transfers? If we do not do that then we will come up to this roadblock every single time, and it is important that we try to remove those roadblocks, which I do not think are in the administration in the United States but actually in Congress. Some of those people are pretty hard in terms of any transfer of technology anywhere, even to an ally like the United Kingdom.

**Lord Drayson:** I think we absolutely need to recognise the reality of the structure of American administration, American politics. Notwithstanding that, though, I do think it is important for us to focus on gritty elements of projects where technology transfer is real and important at that point. That is what I would like the Department to focus on more—clarity, visibility about the specifics; to use its test cases. I note what you are saying in terms of a treaty but in terms of specific projects getting clarity where those projects are affected, and when, by specific areas of technology transfer, gives us the best chance of actually addressing this.

**Sir Peter Spencer:** I wanted to put this into context because Mr Jones did point out that government to government relationship is good, and with the Under Secretary of Defence, Acquisition, Technology and Logistics, is about as close as I get to an equivalent. I have had some quite detailed discussions over the summer, most recently last week, and what he is keen to do is to recognise that far too much senior management and government ministerial time is taken up on relatively small bits of details, and he is looking at the processes by which

the DoD interact with State Department, which is where the decisions are taken, and to make sure that industry is better briefed to understand the basis on which individual applications are made, all of which has hugely speeded up the process recently. I find all of that really very encouraging. But of course when it really comes down to it it is not so much individual members of Congress who are involved in the specifics, it is the State Department and staff officers who do have an obligation to comply with United States’ law, as you would expect, but who occasionally do need to have a case presented to them in a way in which they feel they can give us what they need, what the United States need—because bits of design which are being done by UK companies are being done by all on behalf of the all the aircraft, including those, of course, that go to the United States. So it is not in the United States’ interest if the programme is held up by delays in technology transfers into members of Team Lockheed, and that is very clearly understood both in United States’ industry as well as in the United States government.

**Q223 John Smith:** Last week the Committee was told that the most important area of technology and information transfer relates to operational sovereignty and I think we as a Committee absolutely agree with that. We can understand the point that was made clearly, that access to technology at the right time during the process of design and production is important, but surely access to information and technology that will guarantee operational sovereignty is vital, and it is vital now and not at some time in the future, because we could have the absurd situation where we have one of the most advanced jets in the world but we cannot operate independent of the United States, and no matter how great an ally they are to us I do not think it will be acceptable to this Committee or the British taxpayer. What are you doing to get the information required to ensure that we do have total operational independence for the Joint Combat Aircraft?

**Lord Drayson:** We have set out the requirements that the United Kingdom needs, in terms of the key user requirements we need to see for the aircraft to meet our needs, for example work on our carriers. We also set out the requirements that we have in terms of the type of systems that the aircraft need to have within that, the interfaces between those systems and the weapons that the aircraft may carry. We also need to recognise that one of the lessons in the recent past is that the nature of operations that our Armed Forces are asked to go on has changed quite a lot in terms of the requirement on equipment to carry out a wider range of tasks. Therefore, it is not going to be possible for us to set out in 2005 all that these aircraft may be asked to do in 15 years’ time. Therefore we need to be mindful of that in terms of the systems, the future up-gradability of those systems, making sure that we have an open architecture for the software, making sure that the links between the different types of missiles that the aircraft may be needed to use, we have those options

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open. Where it stands today, my understanding is that we do not have any concerns relating to our ability to meet those type of issues relating to operational sovereignty, but we are mindful of that and that is why we have made sure that we have visibility of when those issues are going to come up—that we have clarity of that—and that we make sure that those requirements are being met at that point in terms of technology transfer. My understanding is that we do not have an issue on that today but as we go forward with the project this is something that we have to monitor closely.

**Q224 John Smith:** But if you do not have today a clear commitment to operational support it is not just major upgrades but the support of the aircraft, on the evidence we were given last week, and it would appear that we do not have the information to be able to guarantee that we do have future support for the aircraft in operations when it is in service. That appears to me, at least, to be pretty fundamental and certainly the evidence that we had last week would suggest that. It appears at this moment in time that we do not have that commitment from the Americans that we will have that level of independence with this aircraft, but I may be wrong.

**Sir Peter Spencer:** We do, via the Exchange of Letters which were signed earlier on, have commitment from the United States government to the United Kingdom government that it understands the basis of the need to enjoy operational sovereignty, and it is spelled out in a number of key headlines, which are signed up to as general principles. The challenge now is to convert that into what this means down into the detail of what bits of technology need to be handed to whom and where and how, and some of that technology has not yet been invented. So this was the process I was referring to earlier, with the Under Secretary for Defence, where he is putting in place a process so that when these bits of information become available—and we understand the relevance—we then have the ability to process much more rapidly, and I think it will be a confidence building exercise over time. What has happened in the last year is hugely encouraging compared with our concerns 12 months ago. I believe that we need to work together in close harmony with the United States' administration and with our own industry and the American industry and continue to demonstrate that there is a process which would work, but, as the Minister has said, and you have echoed, we are right to be extremely alert here for signs that this information might not be arriving in the timetable that we need. But nobody is going to sign a blank agreement at this stage saying, "I will tell you everything that you need to know about Joint Strike Fighter, full-stop."

**Q225 John Smith:** That is not what I am saying.

**Sir Peter Spencer:** I know it is not what you are saying but that is how it tends to appear to some of the working level officials in State Department if a

rather ambiguous or very broad request comes in, which has not been properly constructed, and that is where we are getting the help.

**Q226 John Smith:** But the request is that we have this independent operational capability and that does not exist at this moment.

**Sir Peter Spencer:** We have the agreement on the six provisions. Would it help if I read through the headlines to show the ground which is covered, because it does put some flesh on the bones?

**Q227 Chairman:** If you could be very quick.

**Sir Peter Spencer:** It will be very quick. Interoperability with other UK national defence capabilities; rapid evaluation of air system effectiveness in UK specific scenarios; rapid integration or modification of UK-specific weapon and sensors; inclusion of national variations in elements of the mission system; satisfaction of UK-specific safety requirements and UK based logistic support infrastructure to safeguard national capability. As headlines that is good. That is agreed. The challenge is now to convert that year by year, step by step into a robust working arrangement at detailed level, and there is a lot of support that we are getting government to government to do that.

**Q228 Mr Havard:** I am sure that Congressmen Hunter would have given Geronimo a treaty as well, Kevan, so I would not worry too much about that! What I am interested in is the process which you are describing, because we have the Exchange of Letters, which is the political description. I know in the Defence Industrial Strategy description that you have given me about how that work is being conducted that you talk about the technology matrix. We have been told in terms of this particular project that there is a technology matrix. Am I right in taking from this that there are process issues being put in place that will deal not only with this project—and you talk about who, what and where, but it is the "when" bit that is the real key, is it not? That is what you were saying, Minister. On certain things you are going to have that debate more than one time, but at least now you will have a process between the two governments at a lower level and the political level to actually process each technology as you need to process it. Is that what you are telling me?

**Lord Drayson:** I am saying that, as Sir Peter has described—

**Q229 Mr Havard:** Is that going to be a standing process?

**Lord Drayson:** The principles are set out in the Memorandum of Understanding, as Sir Peter has just described. Those principles now need to be embodied in hard decisions around programme engineering facilities, as the project goes forward. We have a clear need to have operational sovereignty for these aircraft, and we have described the principles under which that needs to take place. What I will say in my earlier answer, relating to technology transfer, is that we need to make sure that we know where in the project those issues

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become “pregnant”, if you like, and need to be addressed, and that we focus on those at that point and we make sure that the principles are being adhered to in reality on specifics as we go forward. I think that there are some opportunities, in the same way that we have done very well in terms of the UK’s proportion, in terms of the build of the aircraft. There are some very innovative things I have seen coming into the Department in terms of which the RAF supports the aircraft in the field—stuff is being done on the Tornado, for example, at RAF Marham—and these are principles that we would like to also see applied to a future aircraft, such as JSF, and therefore we need to see this take place within this programme as it goes forward. It is about getting down to specifics at the point they come up within the programme and making sure that they adhere to the principles.

**Q230 Chairman:** If we could go on to risks in this programme. What are the main risks to meeting the timetable for these aircraft and how are these being managed?

**Lord Drayson:** I think the top risk, the technical risk, which came up a short while ago, in terms of weight of the aircraft has now been mitigated. Both the MoD and the United States are satisfied that the way in which that has been done has put us in a good position.

**Q231 Chairman:** Mitigated but not solved.

**Lord Drayson:** It is never solved until you actually have the aircraft built and flying. As it is known within aircraft development production, as aircraft go through the design and development phase you need to watch very carefully the weight growth, and therefore you maintain a contingency to make sure that as that takes place you can manage it. Where we stand today, the engineers are saying that, yes, that is now back under control, we have got back to the place where we needed to be to meet the key operating requirements of the aircraft. That does not mean to say that we can now relax; we need to maintain that focus as the design and development progresses.

**Q232 Chairman:** And the other main risks?

**Lord Drayson:** I think the other generic risks which you need to watch very carefully—the weight growth one is not unusual in fast jet development—the other one common to other aircraft, helicopters as well as jets, is what is going on with the software. We need to keep a very close eye in terms of the software development to make sure that the systems are properly integrated. That is an area that I know a lot of work is going into in terms of making sure that that is managed well.

**Q233 Chairman:** Cost escalation?

**Lord Drayson:** Within a programme such as this, recognising that this is an American programme which we are participating within, the way in which our elements within the programme—for example the work that is being done here in terms of the lift fan and so forth—the other elements of the systems

which are being done in the United Kingdom, all of these need to be managed in the long-term to ensure that these risks are mitigated, that this is within an American programme, and we need to recognise that we are garnering the benefits from being part of that American programme in terms of the level of technology and the cost which we are accessing. As it stands at the moment my understanding is that the project is in good shape.

**Q234 Chairman:** In good shape for the timetable?

**Lord Drayson:** Yes.

**Q235 Chairman:** You gave us a very helpful memorandum, which said that, “The In-Service Date will be set when the main investment decision for JCA is taken. Our previously announced planning assumptions based on an ISD of 2014 have not been changed.”<sup>1</sup> Is that still the case, since you sent us this memorandum?

**Lord Drayson:** Yes, that is still the case, recognising that we are in the assessment phase of this project, that we have not signed the contracts for the production and take-off of these aircraft.

**Q236 Chairman:** So you have planning assumptions for the aircraft; do you have planning assumptions for the ship?

**Lord Drayson:** The key difference in terms of the aircraft and in terms of the ship is that the aircraft is being done as part of the American programme. What is being done on the ship is part of what we are doing in terms of the evolution of maritime industry within this country. The decision that we are going to be taking on the Main Gate for the ship, the reasons which we have been through at some length this morning, will be taken on the basis of having clarity around the risks associated with that, and at that point we will set the In Service Date for the ships.

**Q237 Chairman:** Really it was a question that was asking for a yes or a no, the question of whether you had planning assumptions?

**Lord Drayson:** We have planning assumptions for the elements of the carrier strike, the way in which we bring together all the various elements of the carrier strike, the ships themselves, the aircraft within it; yes, we do have planning assumptions within that.

**Q238 Chairman:** But you have no overall planning assumption for the carriers?

**Lord Drayson:** We do have planning assumptions for the carriers in terms of the programme with which we are going forward. In terms of the commitment to In Service Date and the commitment for the various parties which are coming together, we have not set that date; but we have to maintain in terms of the way in which we manage the whole defence equipment for the various elements which

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<sup>1</sup> Ev 41

need to come together for carrier strike, and maintaining that in the future, and, yes, we do have planning assumptions, which we are managing.

**Q239 Chairman:** What is the planning assumption for the carriers?

**Lord Drayson:** The planning assumption for the carriers is based upon our expectation of when the carriers will come in, together with the aircraft, together with the other aspects of the equipment relating to carrier strikes. In terms of publicly announcing a commitment to an In Service Date for the carriers, we will do that when I am satisfied that we have confidence based upon the investment decision that we will take.

**Q240 Chairman:** We understand that, I think, but what is the planning assumption?

**Lord Drayson:** I am clearly not understanding something here.

**Sir Peter Spencer:** If I can put this into context and to slightly correct a slip of the tongue by the Minister. The aircraft is in the detailed design stage so it is more advanced than the aircraft carrier. We have gone beyond the so-called assessment phase for the aircraft. But we have still not formally set the In Service Date for those aircraft either.

**Q241 Chairman:** No, you said that in your memorandum.

**Sir Peter Spencer:** They will be set when we make the main production.<sup>2</sup>

**Q242 Chairman:** Indeed, but your memorandum drew a distinction between formally setting the In-Service Date, which would be a decision you would make on the decision of investment, and the planning assumption with the aircraft on which you were working.

**Sir Peter Spencer:** In the context of the Minister saying that he noted the target date that the Ministry had previously announced, those planning assumptions are loosely connected in the sense that the carrier will come into service before the aircraft are ready to be embarked, and we are looking at a period of time between them which is going to be in the region of two years. So the planning assumptions are around that, but they are in the future at a point when we cannot pin them down with precision, which we will be able to do when we have more information.

**Q243 Chairman:** We are not asking for precision here because we are asking only for assumptions, and it seems to me to be odd that you have assumptions for the aircraft but not for the carriers—at least, assumptions for the aircraft which you are prepared to tell us, but not for the carriers that you are prepared to tell us.

**Sir Peter Spencer:** Because the aircraft programme is more mature, it is further down the line in terms of development than are the aircraft

carriers. So we have a better feel for the dates for the aircraft and those are dates which are in the public domain, from the United States. We are not yet in that state of grace with the aircraft carriers. So meanwhile we are tracking those dates with the aim of tying together publicly much more explicitly when we have sufficient information on the carrier programme.

**Q244 Mr Jones:** Is it not the truth, though, Sir Peter, that you have a new Minister who is actually for once being open and honest with this Committee and also doing what is very unusual for an MoD Minister, or anybody from the MoD, who is actually saying, “We do not know,” and will ask to review it. That is what he is actually saying, is it not?

**Sir Peter Spencer:** I think you will have to ask him.

**Q245 Chairman:** You do not have to answer that question!

**Lord Drayson:** I think the question that you are getting at, if I understand it correctly, Chairman (and I may have been a bit slow on the uptake here), is for us to make sure that we can maintain the defence of the United Kingdom effectively, taking into account the evolution from the existing carrier strike capability, which we have, based upon HMS *Illustrious* with the Harriers on it today, moving in the future to the new large carriers with the JCA fighter on them. We have to have planning assumptions in terms of the evolution of that because if we do not we are not going to be able to maintain the defence of the United Kingdom. Now, we do have those planning assumptions but there are overlaps in terms of the flexibility which we have, in terms of the various elements which need to come together. At the same time what we have to do is to make sure that where we are contracting for the delivery of new ships, new aircraft, that we do so in a way that increases our confidence over the delivery date and the cost and the risks that we are taking, and we make sure that we get that right. Because we cannot be in the position—because of the complexity of this a number of things need to come together—where we have gone forward without being clear about the actual cost and delivery date and the level of risk. That is why I am being really quite disciplined on the Department in terms of making sure that the Department does have that clear, with its industrial partners, which have to do what they have to do, before we sign up to this.

**Q246 Mr Swayne:** The First Sea Lord was adamant that the Navy had to have the first ship by 2012. Given your planning assumptions, or whatever you want to call them, what is the likelihood of him being disappointed?

**Lord Drayson:** I really cannot speak for the First Sea Lord; you will have to ask the First Sea Lord.

<sup>2</sup> Note by witness: [decision]

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I think for Sea Lords in the future not to be disappointed we have to have greater confidence on the delivery date and the cost of our long-term goal.

**Q247 Chairman:** I think Sir Peter has been inspired, or not? Not!

**Sir Peter Spencer:** I can tell you that when I came to this Committee previously I set out very much a set of principles that you have heard the Minister strengthen today, and to have that strong ministerial engagement quite so explicitly set out is hugely helpful, as you might expect, because we do need to get ourselves into the position where all of

the Service Chiefs in the future are more likely to be pleased than disappointed because of problems of which you are aware in other areas.

**Mr Havard:** Can I ask my question again, Chair? When is the next best date for you to come back to give us the answers to these questions—February, March?

**Chairman:** I think that is a decision that we will have to take. May I say thank you very much indeed for the evidence you have given this morning. It has been a very worthwhile session and we are grateful to you for those answers you have given us, and to those areas where you have said that there is a degree of decision still to be made.

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# Written evidence

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## **Letter to the Chairman from the Minister for Defence Procurement**

I understand that the Defence Committee plans to hold an inquiry to examine the progress on the Future Carrier and Joint Combat Aircraft programmes and that the Clerk to the committee has written to the Ministry of Defence asking for memorandum on each of these projects. The timing of this inquiry is difficult. You will already know that we are negotiating to establish an alliance to take the carrier programme forward. We also continue to work with our international partners on the JCA programme, prior to formal decisions being taken to proceed to the next stage of the JSF project. By the time of your inquiry in the Autumn, negotiations on the carrier programme in particular may be at a critical stage as we approach the major investment decision (Main Gate) on the programme. But neither that decision nor the production decision on the Joint Combat Aircraft will have been taken. Naturally, we would prefer you to amend the timing of your proposed inquiry until after the Main Gate. If that is not possible, I regret that the Department will be forced to be limited in the information that it will be able to provide to the Committee. While we will, of course, respond as best we can, we will inevitably be restricted in the level of information that we will be able to provide. This is because decisions will not at that point have been made, and we will have to have due regard to commercial sensitivities and the need to protect the Department's negotiating position with industry. There will also be sensitivities with international negotiations with France and the USA at this time.

*Lord Drayson*

*20 September 2005*

## **Letter to the Minister for Defence Procurement from the Chairman**

Thank you for your letter of 20 September 2005 concerning the Defence Committee's inquiry into the Future Carrier and Joint Combat Aircraft programmes—two key programmes which the previous Defence Committee kept a close interest in.

There will always be some difficulties with the timing of inquiries into procurement programmes. However, the Committee is keen to establish the progress that is being made on these two programmes, for example, in finalising the Alliance arrangements and proceeding to Main Gate on the Future Carrier programme (the original target date for which was December 2003).

We are grateful to you and Sir Peter Spencer for agreeing to appear before the Committee on Tuesday 25 October. As you probably know, we have arranged an oral evidence session with industry representatives on Tuesday 18 October.

I look forward to meeting you on 25 October.

*Rt Hon James Arbuthnot*

*28 September 2005*

## **Memorandum from the Ministry of Defence**

### **JOINT COMBAT AIRCRAFT**

1. The Joint Combat Aircraft (JCA) will replace the capability now provided by the RN Sea Harrier and the RAF Harrier GR7/9 and will form a major part of the UK's Future Combat Air Capability in the second and subsequent decades of this century. The JCA will be operated as part of a Joint Force, from both the new aircraft carriers (CVF) and land bases, in a manner similar to the existing Joint Force Harrier but with the greatly enhanced performance required to meet the demands of future operations.

2. The Defence Secretary announced on 17 January 2001 that the US led Joint Strike Fighter (JSF) aircraft had the best potential to meet the JCA requirement. The JCA programme entered its Demonstration Phase through participation in the JSF System Development and Demonstration programme. The UK is the only full ("Level 1") collaborative partner with the United States, both nations having agreed<sup>1</sup> the JSF aircraft's key performance parameters. On 26 October 2001 Lockheed Martin, along with Northrop Grumman and BAE SYSTEMS as Team Lockheed, was selected<sup>2</sup> as the prime contractor for the JSF System Development and Demonstration programme, the UK having participated in the source selection process. On 30 September 2002 the Defence Secretary announced that the UK had selected the Short Take Off and Vertical Landing (STOVL) variant of JSF to meet the JCA requirement.

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<sup>1</sup> Via the the Joint Operational Requirement Document (JORD) that is signed jointly by US and UK.

<sup>2</sup> Following the US led Concept Demonstration Phase for JSF.

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### ACQUISITION PHASES, MILESTONES AND COSTS<sup>3</sup>

3. The purpose of the System Development and Demonstration programme is to mature, test and evaluate the detailed design of the JSF aircraft and to integrate key equipment (including UK weapons).<sup>4</sup> Aircraft production is expected to commence in 2007 with production of the early UK aircraft commencing in 2009.

4. The current estimated cost (at 50% confidence) of the JCA Demonstration Phase is £1,914 million, against an approval of £2,034 million. The UK contribution to the US in cash terms, agreed in the Memorandum of Understanding (MOU) for JSF System Development and Demonstration remains fixed at \$2 billion. This equates to £1,300 million using current mandated exchange rate assumptions (and also equated to some 8% of the predicted total development cost at point of MOU signature). This contribution will be paid over a 12 year period beginning in October 2001. Some £475 million had been spent by the end of 2004–05 on the UK's contribution to the JSF System Development and Demonstration programme, UK national studies and the earlier US concept demonstration phase. The UK costs for the manufacture and in service support phases will not be established until the Production Main Gate decision is taken.

### PRODUCTION

5. Phased production approvals are anticipated, starting with approval to sign a further MOU in December 2006 to enable production, sustainment and follow-on development. Formal negotiations on this MOU have recently commenced on a multi-lateral basis with the 9 JSF partner nations.

### IN SERVICE DATE

6. The In Service Date (ISD) is when the capability provided by the Joint Combat Aircraft is assessed as available for operational use with an initial cadre of aircraft and trained personnel. The ISD will be set when the main investment decision for JCA is taken. Our previously announced planning assumptions based on an ISD of 2014 have not been changed. This would require taking delivery of the aircraft from 2011, and to be conducting flight trials, including work-up flying from the CVF, in advance of the ISD. We also plan to enhance the capability of JCA beyond that provided at ISD through the subsequent integration of additional UK-specific weapons in a collaborative follow-on development phase.

### DELIVERY PROGRAMME

7. Deliveries of UK aircraft commence in 2011 to enable us to participate in joint US/UK Operational Testing and Evaluation, pilot training, aircraft and squadron work up. To ensure that the most cost-effective profile is adopted delivery profiles are not fixed until Production Main Gate.

### PILOT TRAINING PROGRAMME

8. Under current plans, training of UK pilots will start in the US from 2007. These initial pilots will join the pool of pilots for the System Development and Demonstration test<sup>5</sup> programmes. We expect 19 UK pilots will be trained under this contract, 8 will join this joint test programme (and will subsequently go on to form the UK Operational Evaluation Unit in 2011) and 11 will form the first cadre of instructor pilots.

9. The training of the pilots that will form the first UK operational squadron will commence in 2012 at a US training centre<sup>6</sup>. Up to 64 pilots will be trained in the US to meet the manning requirement for the first UK operational squadron, as well as to refresh the Operational Evaluation Unit and the initial instructor pilots as aircraft block upgrades are released. The training syllabus has yet to be finalised but is expected to be between 7 to 9 months duration.

10. Training will transfer to the UK training centre<sup>7</sup> in 2015, and the throughput per year will increase from 18 pilots per year to a peak of 42 trained in 2020 to match the aircraft build-up programme for the JCA Force. Annual training throughput will stabilize at approximately 30 pilots per year until the JCA programme nears out of service date, when training throughput will reduce to match aircraft fleet reductions.

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<sup>3</sup> All figures are expressed in resource terms at outturn prices, except where stated otherwise.

<sup>4</sup> Production phase starts with the Low Rate Initial Production (LRIP) which initially produces test aircraft and increases their capability through subsequent LRIP batches and block upgrades until a decision for full rate production is taken.

<sup>5</sup> Described as Developmental Test and Operational Test (DT&OT) programmes.

<sup>6</sup> The US Integrated Training Centre (ITC).

<sup>7</sup> The UK Integrated Training Centre (ITC).

#### WEIGHT PROBLEMS

11. Problems due to unplanned weight growth on all three JSF variants were identified early in 2004. The impact of weight growth on the performance of the Short Take Off and Vertical Landing (STOVL) variant was most severe due to the inherent limitations of vertical landing technology. Work conducted by a specially established team<sup>8</sup> has restored confidence that the performance requirements can be met. In total, there has been a 3,000lb reduction in the actual weight of the STOVL aircraft and the equivalent of a further reduction of 1,000lb through improvements in thrust and a review of the landing requirements. This work was ratified by the US Defense Acquisition Board in October 2004 and reviewed by the MoD's Investment Approvals Board in January 2005.

12. Inevitably, for a complex development programme, risks remain. Work continues on the assessment of how any further problems could be mitigated, should this be necessary to protect the Key User Requirements (KURs) through life and across the full operational spectrum. The greatest focus remains on achieving the weapon "bring back"<sup>9</sup> KUR of the STOVL aircraft, for which weight and propulsion system performance are critical factors.

#### INFORMATION SHARING

13. The UK's requirements for information to enable sovereign operations, maintenance and upgrade of JSF throughout its service life are set out in the Exchange of Letters (EOL) signed by the US and UK Defence Secretaries. This has led to a jointly developed US-UK technology matrix which sets out the UK information requirements at the most detailed level. This has been widely staffed with the US to ensure they fully understand our needs and has been used as a model for other JSF partners to develop their own sovereign requirements. The Department is working at the highest levels with the US administration to ensure that the UK can achieve its sovereign goals as well as enabling UK Industry to fulfil its contractual role within Team Lockheed.

#### AIRCRAFT NUMBERS

14. Final numbers (and variants) will depend on the outcome of ongoing work to confirm overall Future Combat Air Capability requirements. While no final decisions have been taken we anticipate buying up to 150 STOVL variants of the Joint Strike Fighter to meet our JCA requirement.

#### FUTURE CARRIERS—CVF

15. The Future Carrier (CVF) programme continues in its Assessment Phase, enabling further risk reduction and refinement of the carrier design, through a process of value engineering prior to the main investment decision (Main Gate). The companies involved, BAE Systems, Thales, and Kellogg Brown & Root UK Ltd (KBR UK Ltd), continue to be engaged with MoD in an Alliance approach—best described as a co-operative relationship between a client and key contractors/suppliers as a means of delivering improved performance and enhanced mutual business results. The key benefits of the Alliance approach were set out in the Further Memorandum to the Committee in February 2005.

#### FORECAST COSTS AND DATES

##### *Current forecast cost—assessment phase*

16. The current forecast cost of the continuing CVF Assessment phase is approximately £300 million. The continuation of the Assessment Phase is aimed at optimising the balance between performance, time and cost and achieving the appropriate degree of risk reduction before the main investment decision.

##### *Current forecast cost—demonstration and manufacture phase*

17. The costs of the Demonstration and Manufacture phase will not be bounded until Main Gate. At that point the boundaries of the costs will be established at "Lowest, Most Likely, and Maximum". However, the Alliance's 100 day internal review, initiated by the CVF Integrated Project Team Leader in March 2005, which scrutinised and challenged planning assumptions with robust value engineering techniques, has confirmed that the project remains financially viable.

18. We are moving towards the Main Gate. The exact date will only be set when we are confident that the design and contractual arrangements are right and we have sufficient understanding of the cost, scheduling and risks involved.

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<sup>8</sup> The STOVL Weight Attack Team (SWAT).

<sup>9</sup> The level of ability of a craft to return to base with unused weaponry.

*Current target in-service dates*

19. The target in-service dates for the two future aircraft carriers remain unchanged at 2012 and 2015. However, as with all projects in the assessment phase, in-service dates are not fixed until the main investment decision.

*Date when first carrier is expected to be fully operational*

20. The In Service Dates and Initial Operating Capability for the ships, aircraft and various associated equipments that make up the Carrier Strike capability are intermediate milestones on the route to achieving the Full Operating Capability. Each of these key milestones needs to reflect a realistic programme goal and must therefore be based on a sufficiently mature plan so that a definitive date for the Full Operating Capability for the Carrier Strike Capability can be established. Elements of the Carrier Strike capability, however, will be delivered in advance of Full Operating Capability.

*Dates of planned withdrawal from service of the current aircraft carriers*

21. The current planned Out of Service Dates for the Invincible class aircraft carriers are: 2010 for HMS Invincible; 2012 for HMS Illustrious; and 2013 for HMS Ark Royal. These dates are contingent on the final In Service Dates set for CVF. HMS Invincible will be held on very low readiness from October 2005 until reaching her Out of Service Date.

## PROGRESS

*Maritime airborne and surveillance and control platform*

22. The Maritime Airborne Surveillance and Control (MASC) programme will provide assured airborne surveillance and control through the surveillance of air and surface targets and the battle management of air borne assets. This broad capability is currently provided by the Sea King Mk7 Airborne Surveillance and Control (SKASaC) variant.

23. MASC has achieved the objectives set for its Concept Phase and, consequently, received Initial Gate approval—allowing it to move into the Assessment phase of the project—in July 2005. The MASC Assessment Phase will examine the options for providing the solution to the MASC capability requirement including: the continuation of the current SKASaC system; the ability of other ship-optimised rotary wing platforms to provide the capability; and the potential applicability of other solutions. The Assessment Phase will also address the interoperability with CVF and the Joint Combat Aircraft (JCA) and progressively reduce risk, aiming for a Main Gate planned towards the end of the decade.

24. The MASC In-Service Date (ISD) will be decided by Main Gate but is likely to be after the introduction of JCA and CVF: the current SKASaC system will provide the initial airborne surveillance and control capability for Carrier Strike.

## CVF

*Progress in de-risking the programme ahead of the main investment decision*

25. The increasing design maturity of the whole ship aspects has been aided by the Value Engineering (VE) conducted as part of the Alliance's 100 day review. The VE focussed on the identification and validation of opportunities to de-risk the programme by concentrating on cost of the product design; equipment and construction. Whilst producing considerable cost savings and risk reduction, the measures adopted led to a degree of redesign in a number of the systems areas.

26. The appointment of KBR as the Physical Integrator and the growing engagement with the shipbuilding industry has done much to de-risk the supply side of the programme this year.

## THE ALLIANCE

*Alliance Agreement; roles and responsibilities; development of the optimum shipbuilding strategy*

27. Agreement of the alliancing principles by the current participants was a significant step forward. Work continues to develop the detailed arrangements. This includes the Alliance Agreement—which will confirm and commit each participant to achieving the objectives of the Alliance—and the complementary Works contracts for the Demonstration and Manufacture phase. We aim to conclude these prior to the main investment decision.

28. The creation and integration into the Alliance of the Shipbuild Entity and the development of the optimum shipbuild strategy is clearly a key issue for the Alliance and work on this continues. While four potential shipyards were identified on 30 January 2003—BAE Systems Naval Ships at Govan, Vosper

Thornycroft at Portsmouth, Swan Hunter on Tyneside and Babcock BES at Rosyth—the extent of their involvement, and the potential for involvement of other yards will be decided on the basis of achieving VFM while taking into account the capability, capacity and resources of UK industry to meet the full range of planned naval programmes. As client, MoD has retained the right to have the final say in the decisions.

#### INTERNATIONAL ASPECTS

##### *Discussions with the French Government or French industry about the programme*

29. UK and French industries have been tasked jointly by the UK and French National Armament Directors (NADs) to propose areas for possible co-operation as a way of reducing costs and risk whilst preserving our respective national programmes and timelines. Industry has confirmed that it is technically feasible for the basic CVF design to be adapted to meet French requirements, with the French being responsible for some specific adaptations. Ministry of Defence representatives from both the UK and France have been involved in the work in a constructive way, and a better common understanding of the design and related operational aspects has been obtained.

30. The MoD's Memorandum to the Committee in May 2003 explained that the Ministerial level mutual understanding between the two countries was that industry to industry co-operation represented the best way forward. Industry is further investigating a range of co-operative possibilities. The cost, risk and possible contractual arrangements that would be associated with any particular options that are subsequently proposed will then be clarified. The industry output will determine the optimum and most cost-effective way in which any co-operative options can be implemented. How, and to what extent, UK and French industry will participate in a joint programme will form part of these studies.

##### *Discussions with the United States about the Future Carrier programme*

31. Extensive discussions have taken place between the UK and the US related to aircraft carriers since the inception of the UK's CVF programme. From the outset the UK MoD has been acutely aware of the primacy of the US in the design, development, production and use of aircraft carriers.

32. Three US Navy platform programmes are relevant to CVF:

- *Carriers* The US has a well established programme of carriers and steel has now been cut on the \$13bn first-of-class CVN21. However, US carriers are larger than the UK's requirement demands, are mostly nuclear-powered, carry a large number of aircraft for a diverse range of tasks, and are subject to US-specific manning constraints. Nonetheless, discussions with this programme have been underway for some time and vigorous information exchange has benefited the UK in areas such as flight deck layout, sortie generation flows, air traffic management, island design, aircraft launch & recovery equipment and sustainability; conversely, the US have shown interest in UK lean-manning enablers (eg skills and habitability), weapons handling, acquisition strategy and construction methods.
- *LHA(R)* The US is procuring a replacement class for its LHA amphibious carriers. LHA(R) is not a Strike Carrier like CVF, being roled to provide Close Air Support to Marines ashore, but as it shares the UK's requirement to operate the STOVL variant of JCA, a particular area of joint interest is in "ship-air integration". The UK CVF and US LHA(R) teams have committed to working together to undertake this further work in a constructive and timely manner.
- *DD(X)* The next-generation US destroyer programme is likely to be fitted with a propulsion and power generation plant very similar to that envisaged for CVF and for which, incidentally, the US are gaining significant benefit from interaction with the UK Type 45 project. The shore demonstration of the DD(X) plant is the subject of ongoing information exchange with the CVF team.

September 2005

#### **Further Memorandum from the Ministry of Defence**

##### **FUTURE CARRIER AND JOINT COMBAT AIRCRAFT PROGRAMMES**

1. Carrier Strike is an expeditionary air power capability that will be able to operate in uncertain access, basing and overflight conditions as part of a joint force: the fast jet element should be capable of delivering the full range of effects from both the land and sea base. At its core are the Joint Combat Aircraft (JCA),

Future Aircraft Carriers (CVF) and Maritime Airborne Surveillance and Control (MASC), along with expeditionary campaign infrastructure for operations from deployed operating bases. Other enabling capabilities eg Military Afloat Reach and Sustainability (MARS) and Future Strategic Tanker Aircraft (FSTA), will contribute to the success of all components within a joint campaign.

#### WHOLE LIFE COSTS

2. CVF, JCA and MASC are at different stages in their acquisition cycle. All three projects have yet to proceed to Main Gate<sup>10</sup> and consequently, work is continuing to develop our understanding of the acquisition and support costs. Such costs will be an integral part of the Main Gate business cases for the individual projects and will need to be sufficiently mature in order to inform the main investment decision(s).

3. Against this background of maturing cost data, the current estimate of whole life costs for the core projects of the Carrier Strike capability is approximately £31bn, including some £12 bn acquisition costs.

#### OTHER OPTIONS

4. Ahead of the decision in favour of the Joint Strike Fighter (JSF) in 2001, studies were conducted into options to meet the then Future Carrier Borne Aircraft (FCBA) requirement. Other options considered were the US F/A-18E, French Rafale M, “navalised” Eurofighter and an advanced Harrier, but these were all rejected on cost-effectiveness grounds. In September 2002, the UK announced its selection of the Short Take Off and Vertical Landing (STOVL) variant of JSF.

5. While we are not re-considering the decision to procure JSF, normal programme management disciplines mean we continue to assess the ability of STOVL variant to meet the JCA requirement.

#### NON-CARRIER BASED OPTIONS

6. The overall capability requirement was set out in the 1998 Strategic Defence Review and its supporting papers. These concluded that “the ability to deploy offensive air power will be central to future force projection operations”. It also concluded that “we cannot be certain that we will always have access to suitable air bases” and that “even when we do, experience has shown that bases may not always be available in the early stages of a crisis, and that their infrastructure is not always able to support the full range of operations required”. It was judged at the time that a solution based on aircraft carriers would “provide valuable flexibility” and “offer a coercive presence”. We have to date only considered a carrier based solution given the overall requirement outlined in the Strategic Defence Review.

*September 2005*

#### **Further memorandum from the Ministry of Defence**

Further information requested following the evidence session on 18 October 2005.<sup>11</sup>

#### FRENCH INVOLVEMENT IN UK CARRIER PROGRAMME<sup>12</sup>

1. The decision on which aircraft the French might operate from their future carrier is a matter for the French Government and their Ministry of Defence. However, we can say that we have no reason to suppose the French will not continue to operate the non-STOVL maritime aircraft currently operated from the Charles De Gaulle that is: Rafale M, the FR variant of the US E2C Hawkeye airborne early warning aircraft, Super Etendard and various helicopters.

#### PREVIOUS COMMENTS TO THE DEFENCE COMMITTEE REGARDING KEY MILESTONES<sup>13</sup>

2. The Committee has a record of formal memoranda submitted by the Future Aircraft Carrier Project Team during the tenure of the previous Team Leader. Regarding information given to the Committee outside this route, our records may not be fully comprehensive, but we believe that the previous team leader briefed the Committee in February 2002 and again in March 2003 in a “private and informal” session. In

<sup>10</sup> In order to match the US procurement cycle, JCA has been through a tailored Main Gate for Development only.

<sup>11</sup> Ev 1–20

<sup>12</sup> Q 42.

<sup>13</sup> Q 98.

the first presentation an ISD for the first carrier of 2012 was mentioned and a procurement strategy outlined which aimed for Main Gate in 12/2003 and Contract award in 04/2004. In the second presentation, reference is made to the intent to “maintain ISD” and the forward programme repeats the dates from the previous presentation, specifically referring to the Main Gate date as “tbc” and the contract award as an “objective”.

3. As Minister (DP) told the Committee on 25 October, we will not make the main investment decision (Main Gate) until we are convinced that risks are properly understood and actual in service dates will only be set following that decision point.

#### RAND REPORT<sup>14</sup>

4. The MoD commissioned the RAND Corporation to undertake an independent assessment of the Future Aircraft Carrier (CVF) programme. The report was published earlier this year and identified various options for reducing the costs of the programme both acquisition and support costs. The CVF specific report “Options for Reducing Costs in the UK’s Future Aircraft Carrier (CVF) Programme” focuses mainly on reducing support costs and includes some options for acquisition cost savings.

#### *Reducing acquisition costs*

5. The RAND report identified several options that might lead to lower construction costs and the MoD is alert to the opportunities. To a significant extent the cost reducing options identified in the RAND report are being implemented.

#### *Advanced outfitting*

6. The CVF Build Strategy already incorporates the principles of advanced outfitting, including all systems such as electrical, piping and Heating, Ventilation and Air Conditioning (HVAC). A recent review of the Build Strategy by a team drawn from the wider industrial base, including commercial and offshore yards, has built on this assumption and, using the current technical description of the vessel, has undertaken an assessment of the potential early outfit levels that could be achieved at the build yards. This embodies the principles of off-ship modularisation which are being embedded in the ship design and build planning.

#### *Equipment procurement*

7. Through our prospective industrial participants, and prior to full alliancing arrangements being put in place, commercial best practice is being identified to drive savings in production processes and through-life support. Once the alliance is fully formed, programme efficiencies presented through close co-operation among the alliance participants, including in the procurement of equipments, will be incentivised by the commercial arrangements.

#### *Build strategy*

8. The build strategy has evolved since the commencement of the 100 Day Review resulting in a proposal for optimised work allocation and facility investment. Optimising the commencement of the second CVF is an integral part of the build strategy and requires the impact on the labour costs at manufacturing yards to be balanced against the costs of early production both in terms of resource profiling and storage and preservation; the manufacturing shipyards have been tasked to make proposals but this work has yet to complete.

#### *Design reviews*

9. A policy of comprehensive design reviews, involving all stakeholders, at intervals of 6–12 months has been adopted and will continue up until manufacture. The commitment to build will only be taken when we are confident the design is of sufficient maturity to allow construction.

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<sup>14</sup> Q 106.

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*Change management*

10. The Aircraft Carrier Alliance has a robust process in place to manage change, thus ensuring that requirement changes do not have an adverse impact on the programme, particularly in terms of cost growth.

*Use of commercial systems*

11. CVF has been designed to a tailored set of standards, using civil or commercial standards in preference to military standards wherever there is no adverse impact on operations or safety. These principles have been extended to equipment selection, where commercial off-the-shelf (COTS) equipment has been incorporated into the design in preference to military standard equipment. Examples from this approach include:

- Ship structure (Lloyds Naval Ship Rules).
- Diesel Generators.
- Transformers.
- Steering gear.
- Mooring & anchoring equipment.
- Ships boats and davits.
- Waste management system.
- Modular cabin technology.
- Stores lifts.
- Ventilation ductwork.
- Fire fighting systems.
- Pumps & valves.
- Galley & laundry (albeit tailored to ship's power supplies).

*Whole life costs*

12. The report highlights two main areas where support costs could be reduced in the CVF: Whole life Cost (WLC) reduction and reducing manpower requirements. A detailed WLC model has been constructed which includes provision for measuring the impact of uncertainty in cost estimates. This model has identified the main in-service cost drivers for the CVF and is being used to focus design effort. The cost model has enabled CVF support costs to be profiled throughout the classes' life and is assisting the MoD to assess the long-term affordability of the CVF and Carrier Strike capability.

13. The CVF WLC model clearly confirms that manpower at approximately half of the total in-service costs remains the most significant area of opportunity for cost reduction. A number of initiatives to reduce the complement and options are identified in Chapters 7 and 8 of the report. These have been reviewed by the Aircraft Carrier Alliance (ACA). The majority of these align with design and operating principles that either have been adopted or are being considered for CVF. The remainder are not being pursued either because they do not align with Royal Naval Fleet wide operating policies such as the adoption of a broad skilled/cross trained workforce; or because investment appraisal has demonstrated that the initial acquisition cost and associated risk is not justified by the in-service savings. The potential for such situations to arise was recognised in the summary of the RAND Report. This has not, however, precluded taking an innovative and pragmatic approach in line with spirit of the report.

*Maintenance*

14. The second highest in-service cost driver in the CVF is maintenance of the vessels. To minimise this, work has concentrated on reducing the number and complexity of systems and selecting equipments with lower maintenance requirements. For example the adoption of an Electric Propulsion system has halved the total number of engines needed compared to CVS. Potential high maintenance activities associated with gearboxes has also been removed. Although the size of the vessels means that structural maintenance and in particular the costs of preservation (painting) are greater than on CVS current predictions indicate that the total CVF class maintenance costs could be as low as those of those of the CVS class despite the total tonnage of the class being nearly double. Capturing the financial benefits is still at a very early stage and will be progressively matured during the detailed design phase of D&M.

*Contractor logistics support*

15. The RAND conclusions stated in chapter 5 relating to Contractor Logistics Support are supported by the MoD. The project has considered the lessons gained from other maritime programmes of similar size and complexity and concluded that a contract based around whole ship availability is not likely to be value for money or affordable. It is currently envisaged that the support solution for CVF will be of a “mixed economy” nature, where responsibility for support and delivering availability is shared between various industry support providers and the MoD. A range of options with different levels of availability risk transfer to industry will be explored and compared for value for money against current approaches before any decisions are taken.

16. Maintenance reduction measures include the adoption of Under Water Engineering (UWE) techniques, which reduce the need for the vessel to dock; and the adoption of condition based monitoring (CBM) techniques rather than the traditional time dependent planned maintenance system. Additionally examination of the frequency of docking, currently driven by the periodicity of structural survey required by the classification society and the work to be achieved during these periods has reduced the maintenance burden. Preservation of the ship’s hull is already identified as the most maintenance intensive element in the ship and work is being done to reduce the amount and frequency of such work by applying better paint schemes.

COMPANY INVOLVEMENT<sup>15</sup>

17. A list of companies which the Alliance is having discussions with as part of the Future Aircraft Carrier design evolution, including those involved in the current assessment phase is shown below.

*CVF suppliers*

<i>No</i>	<i>Company</i>	<i>No</i>	<i>Company</i>
1.	Imtech Marine and Offshore Limited	9.	Darchem Engineering Limited
2.	INBIS	10.	Alstec Limited
3.	Tyco Marine Services	11.	Aeronautical & General Instruments Limited
4.	McTaggart Scott and Co Ltd	12.	The Entwistle Company
5.	Ultra Electronics Limited	13.	Rolls Royce Naval Marine Ltd
6.	Weir, Strachan and Henshaw	14.	Alstom Power Conversion Ltd
7.	VT Shipbuilding		
8.	L3 Communications (formerly CAE Marine Ltd)		

*Suppliers of design resource to CVF*

<i>No</i>	<i>Company</i>	<i>No</i>	<i>Company</i>
15.	ARTEMIS	29.	Fleet Support Limited
16.	Avrotech Design International Ltd	30.	Harland & Wolff Heavy Industries Ltd
17.	Babcock Engineering Services	31.	HVR Consulting Services Ltd
18.	BAE Systems Advance Technology	32.	Imtech Marine & Offshore Ltd
19.	BAE Systems, INSYTELyon Way, Frimley , Camberley, Surrey GU16 7EX.	33.	Lloyds Register, EMEA
20.	BAE Systems, Naval Ships	34.	Northrop Grumman (Sperry Marine)
21.	BAE Systems (Operations) Ltd, CS&S	35.	QinetiQ
22.	BAE Systems, Royal Ordnance PLC (RO Defence)	36.	Quintec Associates Ltd
23.	BAE Systems Electronics Ltd, UWS	37.	System Design Evaluation Ltd
24.	BMT Defence Services Ltd	38.	Systems Engineering & Assessment Ltd
25.	CSC Computer Sciences Ltd	39.	Thales Defence Ltd, Sensors Division
26.	Devonport Management Ltd	40.	Thales Communications Ltd
27.	Elan Defence	41.	Thales Netherlands BV
28.	Frazer-Nash Consultancy Ltd	42.	Thales Underwater Systems Ltd
		43.	VT Shipbuilding
		44.	Xchanging

<sup>15</sup> Q 77.

*Potential suppliers—under discussion/consideration*

<i>No</i>	<i>Company</i>	<i>No</i>	<i>Company</i>
45.	A & P Group Limited(Head Office)	57.	Heerema Fabrication Ltd
46.	Alstom Marine	58.	Hempel Paints UK
47.	Babcock Engineering Services	59.	International Paint Ltd
48.	BAE Systems Marine (Barrow)	60.	Isleburn Mackay & Macleod
49.	BAE Systems Naval Ships (Scotstoun/ Govan)	61.	Jotun Paints (Europe) Ltd
50.	Burntisland Fabrications Ltd (BiFab).	62.	Kaefer Isoliertechnik Gmbh
51.	Cleveland Bridge Ltd	63.	Leighs Paints Ltd
52.	DML (Devonport Royal Dockyard Ltd)	64.	Pallion Eng Ltd
53.	D-CECC Ltd	65.	Qinetiq
54.	Fairfield Mabey Ltd	66.	SLP Engineering Ltd
55.	Frazer Nash	67.	Swan Hunter (Tyneside) Ltd
56.	Harland & Wolff Heavy Industries Ltd	68.	VT Shipbuilding

TECHNICAL ASSISTANCE AGREEMENTS<sup>16</sup>

*How many UK related Technical Assistance Agreements (TAAs) have been submitted?*

18. To date, 298 have been submitted by US industry.

*How many of these have been approved?*

19. 297 have been approved, whilst one is awaiting approval.

*How many have been rejected?*

20. None have been rejected to date.

21. The Defence Committee may wish to note that many of these TAAs have been amended more than once. As an example, TAA case number 1069–97 which was mentioned at the session by Mr Mogford as a major TAA covering BAES involvement in the JSF programme has already gone through nine amendments.

*November 2005*

<sup>16</sup> Q 128.

## Memorandum from Scottish Enterprise Glasgow

### INTRODUCTION

1. Scottish Enterprise is the main economic development agency for Scotland covering 93% of the population from Grampian to the Borders. The Scottish Enterprise Network consists of Scottish Enterprise and 12 Local Enterprise Companies. Working in partnership with the private and public sectors the Network aims to build more and better businesses, to develop the skills and knowledge of Scottish people, and to encourage innovation to make Scottish business internationally competitive.

2. Scottish Enterprise Glasgow (SE Glasgow) is the local enterprise company for the city. Although having significant presences at other locations in Scotland, the shipbuilding has long been, and continues to be identified with Glasgow and the River Clyde and the industry has a continuing role as a major employer in the city. Against this backdrop, SE Glasgow is taking the lead for the Scottish Enterprise Network in supporting the development of the industry and in attempting to maximise the economic development opportunities potentially provided from the development of a vibrant Shipbuilding and Marine Sector. SE Glasgow is actively engaged with all parts of the SE Network and the evidence submitted here will cover the whole of the Scottish Enterprise area.

3. SE Glasgow hosts and supports the Scottish Marine Industry Steering Group, a joint company, trade union and government agency group bringing together key industry players to help develop a coordinated strategy for the development of the shipbuilding and marine sector in Scotland.

4. The Scottish Executive's Clyde Shipyards Task Force recommendations and the UK Government's Defence Industrial Policy provide the backdrop to a strategy for the creation of employment opportunities from the development and manufacture of defence-related products. Stemming from this work, Scottish Enterprise (SE) now has a board-approved Shipbuilding and Marine Sector Action Plan for Scotland and is in the course of actively attempting to secure the maximum potential opportunities for and from the sector.

5. The SE Action Plan provides a strategy for the development of our organisation's support for the industry. Whilst addressing the potential for civil shipbuilding and marine sector activity, at its core the Action Plan is designed to maximise the economic impact in terms of employment and contribution to gross value add (GVA) of UK naval shipbuilding. Clearly this is based on the various naval shipbuilding projects currently underway or in the Ministry of Defence's future programmes. The main such project identified in the Action Plan is the Future aircraft Carrier (CVF).

### FUTURE AIRCRAFT CARRIER (CVF) PROGRAMME

#### *Impact of programme delays on employment*

6. Despite firmly-identified defence requirements and the fact that naval shipbuilding programmes have the potential to retain and expand the UK industrial workforce, procurement delays on the largest naval programme, CVF, mean that the industry is instead currently facing significant potential job losses. As a consequence, the potential for naval shipbuilding projects to act as a catalyst for long term skills development is looking increasingly problematical.

7. The CVF project entered the assessment phase (Initial Gate) in December 1998—nearly 7 years ago. It is of course recognised that the MoD must ensure that the procurement of future military shipbuilding projects must achieve best value for money, being funded as they are from the tax base. However, as is acknowledged in the Government's Defence Industrial Policy, the wider picture of ensuring the economic advantage is obtained from essential UK defence spend is also an important aspect of that equation.

8. Major naval shipbuilding projects have a direct and immediate ability to sustain and generate employment opportunities for UK citizens, support the development of the UK's manufacturing skills base and to create a trained workforce which can serve other sectors such as marine engineering, construction and renewable energy after the completion of naval shipbuilding projects. The latter is a major plank of the SE Action Plan which looks at the potential for the creation of a long term career paths in manufacturing and construction. In essence military shipbuilding projects offer the opportunity to derive direct benefit to the civil sector. In addition to core trade skills, the increasing complexity of naval ships, ship systems and ship construction projects offer the potential to create quality jobs and considerably enhance the long term capabilities of the UK workforce.

9. As has been widely acknowledged, the two CVF vessels will be too large to be built in any one location in the UK and will thus involve many shipbuilders. As is currently understood to be the case, construction will be undertaken on a "block" concept, with 5 main superblocks being manufactured in various UK yards and a further number of smaller blocks being likewise procured from a variety of suppliers on a competitive basis. Integration of the blocks is currently planned to take place at one location. Scottish based companies, including BAE Systems Naval Ships in Glasgow and Babcock Engineering Services at Rosyth, Fife, are expected to have major involvement in the CVF project.

10. Despite what is understood to be in excess of £200 million having been spent to date, the CVF project has yet to finalise the ship design, the budget, the construction programme and the contracting methodology. The MoD has yet to obtain any firm proposals from contractors which will help define costs, de-risk the project and reduce the exposure of the taxpayer to price hikes stemming from ill-defined plans.

11. BAE Systems has 80% of the UK's naval ship design capacity, with a large element of the design team (some 260 designers) being located in Glasgow. A large part of this team, that which is not otherwise engaged on other projects, is now under imminent threat owing to lack of design work on CVF being committed. Naval design is a highly specialised field and continuity of work is essential if skills are to be maintained in the UK industry. Designers work on ship programmes, not individual ships. They take a long time to train and are an expensive resource. Lack of continuity in scheduling military ship programmes is a huge threat to the ability of companies to maintain a design function. CVF, the next major programme in the pipeline, has the potential to safeguard many jobs. The reverse is equally true.

12. Babcock Engineering Services in Rosyth operates what is understood to be one of the most cost-effective naval ship refit and repair operations in the UK and has won several contracts from the MoD on a competitive tender basis. Unlike other naval dockyards it has no guaranteed work-stream of future refit programmes. It has recently commenced or is about to commence refit work on the Royal Navy aircraft carrier *Ark Royal* and a major Royal Fleet Auxiliary vessel, *Fort Rosalie*. However, these are limited term contacts.

13. The Rosyth location has the capacity to undertake both CVF construction and integration, one of very few sites in the UK that could undertake such work. However, with the decline in military ship repair and refit workloads and with no immediate prospect of the CVF programme coming through, the already-reduced workforce is likely to see even more redundancies. Other civil contract work is being actively pursued. However, there is concern that if there is no early prospect of CVF and other work to justify retention of the workforce, staff and skills level will be further depleted, potentially to the point that the yard will fail to achieve the critical mass required to support a ramp-up to meet the needs of the CVF programme.

14. Certainly it is the case that in the absence of an established demand and timeframe for CVF (and other programmes), workforce training and skills development programmes cannot be properly developed. In the case of BAE Systems in Glasgow, the current Type 45 Air Defence Destroyer and Landing ship Dock (Auxiliary) projects are creating the opportunity for apprenticeship schemes which SE Glasgow is actively supporting.

#### *French involvement*

15. The CVF project team is understood to have been instructed to investigate collaboration with France on its second aircraft carrier (PA2). In the context of the above comments, it is important to note that in our view any serious collaboration will inevitably result in even more delay as the projects are aligned.

16. A further concern is that the potential could be for elements of what should be a UK naval ship programme that provides a boost to the industry, to be procured from France. The French government sees DCN (its principle naval shipbuilder) as a national "champion". DCN does acquire lower cost items from around Europe, but high value design and construction is retained in France, thus protecting high value jobs. It is considered that a similar approach by the UK government will reap the maximum benefits for the UK workforce and high quality skills development.

#### SUMMARY

##### *17. Scottish Enterprise's key concerns are set out as follows:*

17.1 Even if the CVF project goes ahead and 'main gate' is achieved in Spring 2006 (the earliest date currently anticipated) it is considered unlikely that steel will be cut before 2008 and the first block delivered to Rosyth before 2009–10. This needs to be addressed as a matter of urgency by the MoD.

17.2 In the meantime, as there has been no firm decision on the contractors, Scottish Enterprise is not able to work with them to ensure Scottish workforce skills are developed. Training takes time and appropriate external training courses cannot be established without firm demand.

17.3 In the absence of firm commitments it is difficult if not impossible to determine workforce requirements and to set in train the appropriate recruitment programmes. Clearly the project has the potential to create many hundreds of jobs. The potential exists not only to develop jobs for the youth apprentices, but also for adult long term unemployed, for which Scotland has developed appropriate support schemes.

17.4 In Scotland, the two main locations are in areas demonstrating comparatively high levels of unemployment—Glasgow City: 5% and Fife: 4.3%. Both of these are above the Scottish average. Within the overall employment profiles it should be noted that the employment rate in Glasgow, at 70%, is well below the Scottish average. It is also the case that in Fife, some 23% of wards have unemployment rates which are more than twice the national average. Major job-generating projects have the potential to make a significant impact on these figures.

17.5 SE is committed in the Action Plan to the development of an integrated Scottish Marine Technology Training Project. This work cannot be commenced until the parameters of what it must be designed to address are known.

17.6 Current Scottish company order books are drying up and layoffs of existing staff are likely. It will be difficult to get people back into the industry when needed. In short, CVF, the largest defence naval ship project that has the potential to employ and up-skill the Scottish workforce has so far failed to deliver.

17.7 There is a danger that further delays will exacerbate the problem of company shipbuilding operations failing to provide adequate shareholder returns, with a consequent potential failure to invest, the loss of yard capacity and the loss of employment opportunity.

17.8 CVF is the only project on the horizon that can justify retention of the numbers of ship designers currently in the industry.

17.9 It is essential for detailed design to be undertaken to help de-risk and improve cost certainty in the CVF programme. Instead Scottish-based designers are about to be laid off through lack of work.

17.10 Naval design is a high value-add job function. If the UK loses these skills the MoD will be forced to obtain them from overseas, thus creating quality jobs overseas.

17.11 If design is procured from overseas providers, the UK is effectively ruling out a future export opportunity. Design excellence and experience is pre-requisite for winning export orders.

17.12 French collaboration will further delay the CVF project. (Practical experience of problems with collaboration can be seen in the ill-fated Horizon project—a collaboration project between the UK, France and Italy on the development of an air defence frigate started in 1992. The UK pulled out of the project to pursue Type 45 after many years of disagreements on specifications.)

17.13 The potential also exists for France to capture a larger share of any joint project, meaning potentially less work for the UK yards.

17.14 Clear decisions on CVF are required if SE is to help the companies source and train staff and for Scotland to extract economic advantage from defence spend.

*Ron Culley*  
Chief Executive

*October 2005*

#### **Memorandum from the Keep Our Future Afloat Campaign**

1. The “Keep Our Future Afloat Campaign”, (or KOFAC as it is known in the north west of England), is a trade union-led lobby Campaign. The CSEU, Amicus and GMB are the lead unions in the campaign. The Campaign was launched in April 2004 in response to a further round of large scale job losses at the BAE SYSTEMS owned Barrow shipyard in north west England. The lobby also has the support of Barrow Borough and Cumbria County Councils and Northwest Development Agency. In September 2004 the then Secretary of State for Defence The Rt. Hon. Geoff Hoon MP described the lobby as “one of the most effective defence lobbies he had come across.”<sup>17</sup>

2. Our Memorandum to the Defence Select Committee outlines:

- KOFAC’s aims.
- How use of Barrow shipyard capacity and capability in the build of the future aircraft carriers can help reduce risk to the programme by making use of the shipyard’s embedded domain know-how in building large warships.
- How workload gaps result in loss of skills. Level loading of work is therefore needed to sustain capability to deliver the equipment the armed forces require
- The importance of ordering a batch of new submarines now so they are in service to protect the carriers when operational.

#### **KOFAC AIMS**

3. KOFAC aims to:

- secure full utilization of the unique assets found in the Northwest region’s naval shipbuilding industrial base—the shipyard at Barrow, a regional supply chain of 1,700 companies, and thousands of highly skilled people.
- sustain and grow jobs in naval shipbuilding in north west England.
- sustain design capability, located, in Barrow which accounts for 60% of the total UK naval ship/submarine design resource.

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<sup>17</sup> Speech to Amicus fringe meeting “The future of the UK’s defence sector”, 29 September 2004.

4. KOFAC supports introduction of a strong Defence Industrial Policy and Strategy to sustain key skills, tacit knowledge and jobs in the UK naval shipbuilding industrial base and as a foundation for SMART defence procurement, affordable equipment delivery and effective through life support of naval vessels.

5. We endorse the MoD Defence Industrial Strategy objective of “maximizing the battle winning capability and security of this country” through the Defence Industrial Policy.<sup>18</sup> KOFAC however believes it is also about sustaining jobs and skills in the naval shipbuilding industrial base in order to enable, what Lord Drayson recently described as the, “armed forces to receive the equipment they require, on time, and at best value for money for the taxpayer”.<sup>19</sup>

6. The future aircraft carriers project represents a significant potential opportunity for the naval shipbuilding industrial base of North West England and the UK.

The Government’s planned naval shipbuilding programme, capacity and capability at Barrow, how it benefits and has potential to reduce risk for the forthcoming aircraft carrier programme.

“There is to be one of the largest procurement programmes of new ships for the Royal Navy in many years, including . . . six Type 45 destroyers, three astute class submarines . . . future plans include purchase of two new aircraft carriers, further orders for destroyers, astute class submarines and progressive replacement of existing fleet replenishment ships”.<sup>20</sup>

7. The planned two aircraft carriers will operate as part of a fleet task force comprising guardships and submarines. Existing RFA replenishment at sea vessels, which may be too old and too small to replenish the two aircraft carriers, will need replacing by the time the aircraft carriers are operational. A new fleet of ships, classed as warlike vessels (the MARS programme) will cater for this need.

8. The two future aircraft carriers are to be two of the largest ships built for the Royal Navy. They will be constructed as a series of mega-blocks, probably at several suitable shipyards. These mega-blocks will then be joined together at a single location. **KOFAC considers some of the mega-blocks should be built at Barrow for the reasons described below.**

9. 60% of the UK’s naval ship design capability is located at Barrow. Since 1945 almost every “first of class” large warship for the Royal Navy has been designed and built at Barrow. The build and operation of the two new aircraft carriers will need to use the knowledge gained and practices developed in the recent build of large warships for the Royal Navy. Much of that expertise, or domain know-how, is located at Barrow and in the north west of England. The most recently delivered large warships, HMS Albion and HMS Bulwark (18,500 tonnes each) and RFA Wave Knight are the nearest in size and complexity to the proposed carriers. The “Albion” class was built and fitted out at Barrow to operate as sophisticated command and control centres coordinating air, land, sea and amphibious landing operations. Admiral Sir Alan West, First Sea Lord, described this capability, delivered through Barrow, as follows:

“The two landing platform docks: Albion and Bulwark, Albion now fully at R2: she has, . . . an amazing command and control capability; her ISTAR set up there, her intelligence officers, they have really set up a network enabling capability for running major operations. . . . at the end of the day, for the amount we paid for it, it is amazing. It is an amazing ship. We should be very proud that was knocked up and Britain built and is there. The same sort of platform, the LPD17 in America, I think is almost twice as much, to give the flavour”.<sup>21</sup>

The command, control and at sea replenishment technologies that were devised for “Albion” class ships will be essential components for the two carriers design. Through building these ships Barrow has considerable embedded learning, design and integration knowledge and expertise. All is relevant, and able to be applied, to the future aircraft carrier programme. It therefore makes sense to utilize this expertise to help reduce the risk to the carrier programme.

10. Barrow has in the last 3 years delivered considerable acquisition cost savings through adoption of new techniques on the “Astute” programme. Barrow is a shipyard which leads in cost efficiency drives and one that has spare capacity. Our submission to the Select Committee is that the UK needs to make maximum use of Barrow shipyard in building the future aircraft carriers in order to capitalize on available expertise and help reduce risk to the project. Our view is supported by independent advice given to UK MoD by consultants Rand Europe. Rand says: “. . . Barrow is an untapped source of production capability and could likely play a significant role in the coming shipbuilding programme . . .” where, “. . . the demand for final assembly facilities will be particularly high between 2006 and 2010 . . .”<sup>22</sup>

<sup>18</sup> Lord Drayson, 21 September.

<sup>19</sup> Lord Drayson, address to Royal United Services Institute, 12 September 2005.

<sup>20</sup> Mr Adam Ingram MP, Minister for the Armed forces, Hansard, 15 June 2004.

<sup>21</sup> 24 November 2004, Defence Select Committee, Admiral Sir Alan West.

<sup>22</sup> The UK’s naval shipbuilding industrial base—the next 15 years. Rand Europe.

11. Barrow shipyard has a range of facilities that would enable it to function as a “mixed capability” naval shipyard able to build naval ships, including warlike fleet replenishment ships, and submarines simultaneously. Barrow could be used to construct, integrate and test and commission large mega-blocks of each of the two aircraft carriers. The facilities available include:

- The largest single concentration of naval design expertise in UK.
- Large covered shipbuilding hall.
- New Assembly Shop NAS assembly facility.
- Heavy lift transporters.
- Superberth slipway of 260m by 100m size, able to accommodate with its own support facilities for 1,500 people working on the berth.
- Submarine Marine Installation Test Establishment (SMITE).
- Skilled workforce of 3,200 and a pool of former shipyard workers and a pool of new apprentice and graduate recruits flowing into the industry.

This resource base is unique in that it embraces probably the largest UK reservoir of recently domain knowledge gained in delivering large warships. KOFAC considers this unique resource base can help ensure the demonstration and manufacture phase of the carrier build remains on track for the ships to be delivered as planned in 2012 and 2015.

12. If Barrow features in the carrier build a mega-block would be assembled integrated on the superberth then launched and transported for final integration at the carrier integration location elsewhere in the UK.

13. In 2002–03 BAE SYSTEMS decided, with Government support, that Barrow should become a submarine build only yard in order to deal with the backlog of “Astute” submarine work. KOFAC has helped BAE SYSTEMS Barrow based management lobby since then for the shipyard to be considered for surface shipbuilding opportunities. The extensive progress made on the “Astute” programme since 2003, and the availability of embedded expertise has helped turn around the fortunes of the shipyard. The owners, BAE SYSTEMS now see Barrow as having a wider role in the forthcoming naval shipbuilding programme.

14. Steve Mogford the Chief Operating Officer at BAE SYSTEMS informed the trade unions in April 2005 at the BAE April 2005 TU Conference that “Barrow will be involved in the Design and Manufacture of CVF”. This came after BAE made a policy change in October 2004 to the effect that “BAE Systems Barrow will be actively considered for Design or Design and Build of Future Surface Ships for the Royal Navy”<sup>23</sup>

15. Both Rand and BAE SYSTEMS recognize Barrow is a versatile shipyard. KOFAC envisages it building a series of additional “Astute” submarines, whilst at least one mega-block for each carrier is built here too. Level loading of the surface ship build operation into the future could be achieved by build of modules for (a) MARS support ship(s). A policy to support using Barrow shipyard for building parts of the carriers will also contribute to wider Government and Defence Industrial Strategy objectives such as assisting regeneration of the economy of Barrow Travel to Work Area, a large part of which is ranked 33 on the Office of the Deputy Prime Minister’s Index of Deprivation for England. Barrow is also recognised as a “location far from the engines of growth in the North West”. The mega block could therefore act as an engine of economic growth for the area. The Select Committee are recommended to support the use of Barrow shipyard to help de-risk the carrier build programme.

Transforming Procurement Policy, the Importance of sustaining the skills base in naval shipbuilding, and level loading of workloads.

16. The Ministry of Defence’s SMART procurement practice mainly awards contracts based on competition and contract by contract value for money criteria. It has short term time horizons and is largely about getting the best price for a particular piece of equipment.

17. Past procurement has been characterized by a lack of visibility of forward orders, long gaps in between orders, and a private sector response which has seen each contract end marked with a major programme of redundancies. Many skilled people have been lost from the shipbuilding resource base. A recent example was the 700 redundancies at BAE SYSTEMS, Barrow, announced in 2004, on sail out of HMS Bulwark.

18. “Continuity in the industrial base is an important factor. Key skills were lost in the gap before Astute commenced production”. Long workload gaps between warship, including submarine, orders, job losses, and the resulting loss of know-how and skills, has required relearning, redesign overcoming of design difficulties and has driven up the cost of some key naval equipment programmes in the past. KOFAC sides the practice of allowing workload gaps to appear and the lack of a policy to “level load” work in key

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<sup>23</sup> Mike Turner—October 2004.

shipyards are a threat to the UK's ability to design and deliver sophisticated warships. Appendix A, and 3 quotes below, gives the Select Committee an example from the industrial, MoD and Royal Navy perspectives of what can go wrong when skills are lost at the end of a ship construction programme:

- The workforce at the Barrow shipyard had been downsized so there were fewer skills and experienced staff to cope with the complex task of designing a submarine”.<sup>24</sup>
- At the time we did not realize there had been such a great loss of skills”.<sup>25</sup>
- We had stopped building ballistic missile submarines, I believe, we had finished with our Vanguards and there was then a gap, and, as you rightly say, all the skilled workers, all the skilled designers, everybody disappeared. There was then a gap and then we had to build this up again, and that is not a clever way of doing things. You need a drum beat of these things to get the best answer out of it, and therefore to fall off the precipice and not do anything for a while and then suddenly order them to do something is not a clever way of doing it. Doing that within the constraints of our funding and treasury rules and everything else is difficult”.<sup>26</sup>

19. On 15 September 2005, in a speech to the Defence Manufacturers Association, on the forthcoming Defence Industrial Strategy, Lord Drayson the Defence Procurement Minister said: “First let me be clear: This is about maximising the military capability and security of the country. It's not about jobs”. KOFAC considers the two issues are interconnected and inseparable because of the need to avoid problems of the past described in paragraph 18 above and because of the recognized national need to increase the naval shipbuilding labour force beyond 2006.

20. Rand Europe, independent advisors to the UK Ministry of Defence, identify:

*“ . . . a projected need to increase the national supply of naval shipbuilding skills by 2009–10 by 50% more than is available today . . . ”*,<sup>27</sup>

This is largely to accommodate the aircraft carrier build programme. Rand go on to clearly spell out the risk of order and workload gaps between 2005–07 that could cause skilled people, especially naval designers, to leave the industry and the importance of finding alternative work for these people to prevent them being lost to the industry. They conclude:

*“ . . . there could be a sharp drop-off in demand for the technical workforce (naval designers) in the next two to three years but CVF, MARS, and JCTS will increase the demand for technical workers (to) nearly double from its low . . . ,”* adding that, *“ . . . these workers (need to be) retained through the near term down turn.”*<sup>28</sup>

We endorse Rand's recommendation.

21. Lord Drayson in September 2005 said:

*“ . . . where we can sensibly smooth out the peaks and troughs, we should do so. Nevertheless, there will be areas where, following the end of one project, business activity may risk falling to unsustainable levels. We need to ensure this does not lead to the loss of vital long-term knowledge, whose re-creation may be prohibitively expensive to recreate. In order to achieve such sustainability we will require a very open approach between the MoD and Industry and I hope that the Defence Industrial Strategy will allow us the opportunity to set the conditions for improving further our relationships . . . ”*.

It is essential to bridge the projected naval shipbuilding 2005–07 workload gap and retain skills and capacity if the capability to deliver the two future carriers is to be available in the UK. Advancing carrier design work or multi-ship orders could help address this imminent workload gap. The Select Committee is invited to consider asking MoD witnesses how the gap will be addressed and what resources will be used to do so.

22. It is also crucial that industry and MoD show people that shipbuilding offers a long term career future so they can be attracted into the industry to service the carriers programme. This is because evidence shows that once people leave shipbuilding they are hard to replace. Britain risks losing its ability to design and build sophisticated ships and submarines if a level loading of shipbuilding activity is not an integral part of ship procurement.

<sup>24</sup> Mike Turner, BAE SYSTEMS.

<sup>25</sup> Sir Kevin Tebbit, Ministry of Defence.

<sup>26</sup> Admiral Sir Alan West.

<sup>27</sup> The UK's naval shipbuilding industrial base—the next 15 years—Rand Europe.

<sup>28</sup> The UK's naval shipbuilding industrial base—the next 15 years—Rand Europe.

23. The lessons from the recent past must be learned, and the importance of maintaining short and medium term ship building skills for the future planned naval programme. The core expertise and skills available in the naval shipbuilding industrial base of North West England is an essential part of this skills resource required for the aircraft carrier programme. The new Defence Industrial Policy and Strategy must have retention and development of this industrial capability, key skills and technologies and hence jobs at its core.

24. Without such an approach the industry could go the same way as UK commercial shipbuilding and virtually disappear.

25. KOFAC believes the new Defence Industrial Strategy, to be adopted early in 2006 as a framework for investment in defence capability, must be accompanied by a Naval Shipbuilding and Submarine Industrial Base Strategy which should be based on a form of procurement which delivers a regular drumbeat of orders designed to sustain skills over the longer term. This means planning for a regular drumbeat of orders, and a closer partnership with industry to identify and manage risk and reduce costs.

26. On 12 September Lord Drayson said:

*“The emphasis will be on through life capability; developing open architectures that facilitate this; and maintaining—and enhancing—the systems integration know how that underpin it. The attractions for industry should include longer, more assured revenue streams based on long-term support and continuing development. Not a series of big ‘must win’ procurements”.*

27. KOFAC believes that MoD and the Treasury need to consider potential for through life procurement contracts more effectively. MoD at the BAE Barrow Supplier Conference on 6 September 2005 indicated that it had not yet decided whether through life contracting should be platform, system or individual equipment based. The Mod said the challenge would be to decide how much through life support could be defined at the start of a build programme. Several suppliers suggested that the ability to tender for supply of original equipment and its through life support could dramatically reduce cost to MoD, improve reliability and thereby help minimize annual support costs for the future carriers.

*“Sustaining the UK’s Submarines Centre of Excellence at Barrow” helps the future aircraft carrier industrial base and programme*

28. Attack submarines continue to play a strategically important role in defending the UK and play a vital role in protecting the future carrier force. Our existing 11 attack submarines are getting old and costly to maintain. Whilst three new boats are building and there is currently a debate underway as to how many more submarines need to be ordered, when and in what quantity.

29. KOFAC considers that ordering a batch of four more attack submarines (boats) will enable the MoD to deliver the UK’s required capability whilst replacing ageing vessels. It will also enable the Royal Navy to have a fleet of modern submarines available to secure the sea space around the operational carriers. Ordering a batch of four boats will also be more cost effective to MoD and offer greater savings over a piecemeal approach.

*Conclusions: Make use of Barrow and our versatility*

30. KOFAC has concluded.

- Retention of key skills in naval shipbuilding is the key to ensuring delivery of sophisticated warships such as the future aircraft carriers and achieving the objective of maximizing battle winning capability.
- Barrow is one of the few UK shipyards with the versatility and the physical capacity available for building carrier mega-blocks. It has the added benefit of a large project management and design resource on site. It is a national asset base uniquely placed to build large warships and submarines.
- Level loading of work programmes and encouraging new entrants to the industry is essential if the skills required for the carrier programme are to be available.
- Long term industrial planning creating a regular flow of orders, preferably multi-ship, and submarine orders will encourage industry to invest, retain skills and enhance physical build capability. This will avoid workload gaps and job losses.
- Government and industry should market the opportunities the naval shipbuilding industry in general and the carriers in particular offers to skilled people in the long term, and they should market the opportunity to attract new people back into the industry at apprentice, skilled crafts, and graduate levels.

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- Judicious use of available financial resources such as Treasury ‘year end flexibility’ should be used to consider making of incremental design improvements, thereby sustaining workloads, particularly for designers.

## APPENDIX A

### *Impact of skills losses on naval ship build programmes*

One of the most notable examples of this type of problem arose due to the long workload gap between submarine production that gave rise to problems with the “Astute” submarine programme. BAE Systems’ Mike Turner and Sir Kevin Tebbit told the Public Accounts Select Committee that:

*“The workforce at the Barrow shipyard had been downsized so there were fewer skills and experienced staff to cope with the complex task of designing a submarine VSEL had no alternative because of the gap between the end of the Trident and the state of Astute but to significantly downsize the workforce undoubtedly a lot of experience went out of the yard and there was a gap in maintaining the expertise” . . . at the time we did not realize there had been such a great loss of skills”.*<sup>29</sup>

*“what had been lacking in the UK defence industry for some time was a strategy on the naval side to keep continuity in workforce and resources” (Q144).*

*“The way I would start answering that is that we have had quite big problems over the Astute programme. . . . Part of the reason for that was because we had stopped building ballistic missile submarines, I believe, we had finished with our Vanguards and there was then a gap, and, as you rightly say, all the skilled workers, all the skilled designers, everybody disappeared. There was then a gap and then we had to build this up again, and that is not a clever way of doing things. You need a drum beat of these things to get the best answer out of it, and therefore to fall off the precipice and not do anything for a while and then suddenly order them to do something is not a clever way of doing it. Doing that within the constraints of our funding and treasury rules and everything else is difficult”.*<sup>30</sup>

October 2005

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<sup>29</sup> Q141-142, Select Committee on Public Accounts, 23 February 2004.

<sup>30</sup> Q141-142, Select Committee on Public Accounts, 23 February 2004.