



House of Commons
Committee of Public Accounts

Management of the Typhoon project

Thirtieth Report of Session 2010–12

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

*Ordered by the House of Commons
to be printed Monday 4 April 2011*

HC 860
Published on 15 April 2011
by authority of the House of Commons
London: The Stationery Office Limited
£14.50

Committee of Public Accounts

The Committee of Public Accounts is appointed by the House of Commons to examine "the accounts showing the appropriation of the sums granted by Parliament to meet the public expenditure, and of such other accounts laid before Parliament as the committee may think fit" (Standing Order No 148).

Current membership

Rt Hon Margaret Hodge (*Labour, Barking*) (Chair)
Mr Richard Bacon (*Conservative, South Norfolk*)
Mr Stephen Barclay (*Conservative, North East Cambridgeshire*)
Dr Stella Creasy (*Labour/Cooperative, Walthamstow*)
Jackie Doyle-Price (*Conservative, Thurrock*)
Justine Greening (*Conservative, Putney*)
Matthew Hancock (*Conservative, West Suffolk*)
Chris Heaton-Harris (*Conservative, Daventry*)
Joseph Johnson (*Conservative, Orpington*)
Rt Hon Mrs Anne McGuire (*Labour, Stirling*)
Mr Austin Mitchell (*Labour, Great Grimsby*)
Nick Smith (*Labour, Blaenau Gwent*)
Ian Swales (*Liberal Democrats, Redcar*)
James Wharton (*Conservative, Stockton South*)

The following member was also a member of the committee during the parliament:

Eric Joyce (*Labour, Falkirk*)

Powers

The committee is one of the departmental select committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No 152. These are available on the internet via www.parliament.uk.

Publication

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at www.parliament.uk/pac. A list of Reports of the Committee in the present Parliament is at the back of this volume.

Additional written evidence may be published on the internet only.

Committee staff

The current staff of the Committee is Philip Aylett (Clerk), Lori Verwaerde (Senior Committee Assistant), Ian Blair and Michelle Garratty (Committee Assistants) and Alex Paterson (Media Officer).

Contacts

All correspondence should be addressed to the Clerk, Committee of Public Accounts, House of Commons, 7 Millbank, London SW1P 3JA. The telephone number for general enquiries is 020 7219 5708; the Committee's email address is pubaccom@parliament.uk.

Contents

Report	<i>Page</i>
Summary	3
Conclusions and recommendations	5
1 Decision making on the Typhoon project	8
2 Improving the delivery model	10
Formal Minutes	13
Witnesses	14
List of printed written evidence	14
List of Reports from the Committee during the current Parliament	15

Summary

Typhoon is a multi-role aircraft capable of both air defence and ground attack. The Ministry of Defence (the Department) entered into a contract for the first 53 aircraft in 1998, and is buying Typhoon in collaboration with Germany, Italy and Spain. The total cost to the United Kingdom of buying the aircraft and supporting them in service over the next 20 years is estimated to be £37 billion.

Typhoon is a highly capable air defence fighter and is now being used to defend United Kingdom and Falkland Islands airspace, as well as being part of recent efforts to impose a no fly zone in Libya. However, Typhoon was commissioned during the Cold War and it took 20 years, and a higher budget, from the start of development to the aircraft being deployed operationally.

The Department originally planned to buy 232 aircraft. However, in light of changed operational requirements and significant funding constraints arising from the pressures of the defence budget, it is now ordering 160 aircraft and will retire the 53 oldest aircraft by 2019, leaving a long-term fleet of 107 aircraft. It is unclear as to whether the acquisition of the third phase in this contract, for the last 16 aircraft, was driven by contractual obligations or by operational need.

The project began in the 1980s and the Department was over-optimistic on costs. In particular, it failed to anticipate significant cost increases and delays from the rigid and complex collaborative arrangements. Overall, it is costing the Department £20.2 billion, £3.5 billion more than it first expected, to buy a third fewer aircraft. This is equivalent to the purchase cost of each aircraft rising by 75%, from £72 million to £126 million.

In 2004, the Department decided to retire the ground attack Jaguar aircraft early and to spend £119 million to install ground attack upgrades on early Typhoons to cover the resulting capability gap. These upgrades were ready for use by 2008. A year later, the Department decided to retire the air defence Tornado F3 aircraft early to save money and therefore re-prioritised Typhoon away from ground attack missions to air defence tasks. It is now not using Typhoon's ground attack capability.

Problems with the availability of spares mean that Typhoons are not flying the hours required and the Department is forced to cannibalise parts from other aircraft to maximise the number of aircraft available on a given day. As a result, it is not fully training all its pilots, and only eight of the 48 Typhoon pilots were capable of undertaking ground attack missions on Typhoon. In addition, the Department had to ground five pilots temporarily in 2010. The problem is likely to be exacerbated as the number of Typhoons in-service increases and they are used in a wider range of operational roles.

Support costs are budgeted at £13.1 billion, but reviews by the Department have suggested costs could be as high as £16.6 billion across the life of the aircraft. The Department has identified potential savings of £3.5 billion to keep support costs within budget, albeit that this budget was meant to cover 232 aircraft not the 160 now being bought. We are concerned that the Department has budgeted for cuts to meet overall expenditure targets and that, over time, the costs will creep up again. To ensure good value from this

expenditure, the Department will need to both reduce the cost and increase the timeliness of future collaborative spares and repairs contracts. At present, the contracts do little to incentivise better industry performance and to penalise failure.

The Department has appointed a Senior Responsible Owner (SRO) to be the person accountable for delivering each major procurement project. However the SRO on Typhoon has limited decision making powers and merely co-ordinates activity. That is not good enough.

On the basis of a report by the Comptroller and Auditor General¹, we took evidence from witnesses from the Ministry of Defence on the past decisions taken on Typhoon, and on the improvements that the Department can make to the delivery model to get more from industry in terms of reduced costs and better performance in the future.

1 C&AG's Report 2010-11, *Management of the Typhoon Project*, HC 755

Conclusions and recommendations

- 1. Despite buying 30% fewer Typhoons than originally planned, the cost of production and development has risen to £20.2 billion, £3.5 billion more than the Department first expected.** This reflects the accumulated effect of over optimism on costs. We have commented on this issue in previous reports. Typhoon will be in-service for another twenty years and, given the Department's assurance that it has learned the lessons, our recommendations in this report focus on how the Department can secure best value on the project going forward. Good decisions are based on good information. If the Department is to make more realistic and achievable investment decisions in future, it needs to have a comprehensive understanding of the balance between costs, number of aircraft kept in service and the operational capability which the aircraft provide.
- 2. The Department's calculation of unit cost per aircraft does not include all relevant costs.** The Department calculates a unit cost of £73 million, based on production costs alone. However, the inclusion of development costs and the cost of capital take the total unit cost to £126 million. In order to provide a full picture of costs and enable comparison across projects, the Department should calculate and report its unit cost on a basis that includes all expenditure, including development and production costs.
- 3. The Department was not able to demonstrate that it had conducted a thorough cost- benefit analysis to support its original decision to equip Typhoon with ground attack capability, or its subsequent decision not to use it.** The Department spent £119 million giving Typhoon a ground attack capability to replace the capability previously provided by the Jaguar aircraft. However, in 2009 the Department decided to retire the air defence Tornado F3 aircraft early to save costs and re-prioritised Typhoon in air defence roles. This has meant that Typhoon's ground attack capability is not being used. This is an all too familiar pattern of decision making, reflecting the overall failure to control defence spending; balancing the books in the short term without taking into account long term value for money. The Department should treat decisions about major changes to the operational use of key equipment most seriously and conduct thorough cost-benefit analyses to ensure value for money is achieved.
- 4. In settling on the number of aircraft to be ordered, the Department had to make difficult judgements on the balance between affordability and operational risk.** The net result will be the number of aircraft being bought falling from the planned 232 to 160 and 53 of these aircraft being taken out of use by 2019; leaving a fleet size of 107. It is also unclear whether the third phase of acquisitions was determined by contractual commitments as opposed to operational imperatives. In future we expect the Department to offer us a clearer explanation as to why it has reached such judgements on individual capabilities and for these judgements to be underpinned by robust cost and operational analyses.
- 5. Major defence procurement contracts are often lengthy and therefore carry an inherent risk that elements become obsolete before projects are completed and**

operational. The risk of obsolescence was exacerbated in the case of Typhoon, which was not operational until two decades after the project started. The Department needs to find ways to actively manage this risk to achieve best value for money. It should consider, for example, how to oblige contractors to manage the risk of obsolescence throughout the life of a project, which might include in-built flexibility for aircraft and other equipment to accommodate upgrades.

6. **The Department relies on a small group of key industrial suppliers who have the technical and design capability to build, upgrade and support Typhoon.** In the absence of competition, the Department needs to demonstrate it is achieving value for money from its single source supply contracts but did not supply specific evidence that it is doing so. We expect the Department to generate robust cost and performance data, potentially drawing on its independent United Kingdom support contracts with BAE Systems and Rolls Royce, to assess the value for money of future contracts.
7. **Problems with the availability of spare parts have meant that Typhoons are not flying as many hours as the Department requires.** As a result, the RAF only had eight of its 48 Typhoon pilots capable of undertaking ground attack missions. This has also led to five pilots being grounded and the Department regularly taking parts from some aircraft to ensure it has a sufficient number to meet immediate operational needs.
 - a) The Department must negotiate future contracts so that industry delivers spare parts on time; and
 - b) A limited amount of ‘cannibalisation’, for example, from aircraft undergoing maintenance, may be better than incurring the additional cost of purchasing and storing large amounts of spares, but we question whether it can be cost effective to have three planes with a total value of £ 378 million sitting on the ground. The Department should undertake more robust analysis to determine the most cost effective balance between cannibalising aircraft, buying more spares and accepting increased operational risks.
8. **The Senior Responsible Owner (SRO) on Typhoon is not involved in key decisions, for example, those related to exports of the aircraft.** Good practice suggests there should be one person with full responsibility leading the delivery of key capabilities such as Typhoon. The SRO role as applied by the Department on capabilities like Typhoon does not have appropriate responsibilities and cannot therefore be held to proper account. The Department should consider, as part of the work of the Defence Reform Unit, how to give SRO’s the authority they need to manage the delivery of the equipment for which they are accountable.
9. **The form of collaboration underpinning the Typhoon project has added cost growth and delay to the project.** Decision making within the collaboration is a lengthy process and it can take several years for key upgrades to be agreed and delivered. The arrangements were agreed in the 1980s and driven by political considerations rather than by commercial or military imperatives. Done well, collaboration offers significant potential benefits from sharing costs and developing

common capabilities with allies. To enable it to make the most of on-going and potential new collaborative opportunities, the Department should evaluate its portfolio of collaborative projects to establish what has worked well, or failed, and why this has happened.

1 Decision making on the Typhoon project

1. The Eurofighter Typhoon (Typhoon) was originally conceived in the 1980s during the Cold War to perform mainly as an air-to-air fighter.² It is highly capable in this role and is now being used to defend United Kingdom and Falkland Islands airspace.³ It has also been part of recent efforts to impose a no fly zone in Libya. Changing operational requirements mean the Department is upgrading Typhoon to become a full multi-role fighter aircraft that can perform both air defence and ground attack missions by 2018.⁴ The anticipated total cost of buying, upgrading and supporting Typhoon is £37 billion, of which £18 billion had been spent at the end of 2009-10.⁵

2. The Department originally approved an upper limit of £16.7 billion for the development and production of 232 Typhoons in 1996.⁶ These costs are now forecast to be £20.2 billion, £3.5 billion more than was approved, even though the Department is buying only 160 Typhoons, 30% fewer aircraft than originally planned.⁷ This increase reflects the Department's over optimism when estimating how much Typhoon would cost - an issue that has been reported previously by the Committee on other equipment.⁸

3. Most of the £3.5 billion cost increase on the Typhoon project has been on development costs which have more than doubled from £3.2 billion to £6.7 billion. Production costs have remained within the original approval of £13.5 billion, though 30% fewer aircraft are being procured.⁹

4. The Department excludes certain elements when reporting the unit costs of Typhoon. It bases its unit cost on production costs alone on the grounds that development costs are sunk costs from a separate phase of the project. It also excludes the cost of capital. The Department calculates Typhoon's unit cost as £73.1 million which is significantly lower than if development and cost of capital were included - which would give a unit cost of £126 million. Therefore, excluding development costs does not present the full picture of the cost increases per aircraft.¹⁰ If all costs are included, costs have increased by 75% per aircraft.¹¹

5. The Department has made decisions on other types of combat aircraft which have affected how it plans to use Typhoon. In 2004, the Department decided to withdraw its fleet of ground attack Jaguar aircraft early and to spend £119 million to install ground

2 Q 36; C&AG's Report para 1.2

3 Qq 1, 37, 39 and 41

4 Qq 51, 84 and 88

5 C&AG's Report Figure 8

6 Q 9; C&AG's Report para 2.2.

7 Qq 23 - 32

8 Qq 33 -35; Committee of Public Accounts, Twenty-third Report of Session 2009-10, *Ministry of Defence: Major Projects Report*, HC338, 2009-10 para 9

9 Q 26; C&AG's Report, para 2.2

10 Qq 23 - 35

11 C&AG's report, para 2.2

attack upgrades on early Typhoons to cover the resulting capability gap.¹² The Department said that it had carried out a cost-benefit analysis of this decision in 2004, but there is no evidence of this in the project history. The Department declared this ground attack upgrade to be combat ready in July 2008, on time and budget.¹³ In 2009, the Department decided to retire its other air defence fighter, the Tornado F3, early to save money.¹⁴ Consequently, the Department re-prioritised Typhoon for air defence tasks at the expense of the ground attack capability introduced only the previous year.¹⁵ The Department was unable to demonstrate that it had conducted a thorough cost-benefit analysis to justify these decisions on the operational use of its air combat fleet, even though Typhoon's use has significantly altered as a result.¹⁶

6. The Department signed a contract for 16 additional aircraft in July 2009 - the third phase - to bring the total ordered to 160. The Department made a judgement, based on the balance of affordability and operational risk, not to order 232 as originally planned; believing that 160 aircraft balanced its defence needs against severe pressures on the wider defence budget. The Department considered that buying this number of Typhoon aircraft fulfilled its contractual obligations with the other partner nations.¹⁷ By 2019, the Department intends to have retired the 53 oldest aircraft leaving 107 aircraft operational. The Committee was not convinced that the Department had conducted sufficient cost benefit analysis to underpin difficult decisions made on the Typhoon fleet, for example in deciding fleet numbers.¹⁸

7. The 53 oldest aircraft will still have life remaining in their airframe when the Department retires them. The Department has decided it that it will be better value for money to spend the funding it has on upgrading the 107 newer aircraft to give them greater capability and stop them from becoming obsolete. Obsolescence has been exacerbated by Typhoon not becoming operational until two decades after the project started.¹⁹

12 Qq 84 - 85

13 Q 85

14 Qq 84 - 85

15 Qq 22 and 86 - 87

16 Qq 84 - 85

17 Qq 2 - 8 and 116; C&AG's Report Fig 1

18 Q 5

19 Qq 43 - 44 and 49 - 51

2 Improving the delivery model

8. Typhoon is being delivered in collaboration with three other nations; Italy, Germany and Spain. The project was approved by the Department for full development in 1987 and contracts for delivery of the first 53 aircraft were signed in 1998.²⁰ Work is contracted to various suppliers across the four nations who are responsible for developing and producing various parts of the aircraft.²¹ The Department entered into these arrangements in the mid 1980s when the project was first conceived.²² The arrangements were driven by political considerations rather than commercial or military imperatives. The Department believes that Typhoon would not have been affordable and that the United Kingdom would have struggled to upgrade this complex technology efficiently without such collaboration.²³

9. The collaborative arrangements have proved problematic. The spread of design, manufacturing and support expertise across a number of suppliers throughout Europe has increased the cost of the aircraft overall and poses risks to the timeliness and affordability of support and upgrade activities.²⁴ Decisions need to be made with the consensus of all four nations but they have often found it difficult to stick to the suggested timescale of 40 days for agreeing such decisions. Some key upgrades, such as the ground attack capability on Tranche 2 aircraft, have taken several years to agree and deliver.²⁵

10. The Department did not anticipate the level of cost increases and delays that the collaboration would entail.²⁶ The Department has learned from its early experience and there have been improvements to the arrangements with partner nations. It has been working with partner nations to improve the efficiency and effectiveness of the collaborative process, and reduce the number of contracts.²⁷

11. Given the very limited number of industrial suppliers that have the capability required to support the aircraft, the Department has contracted with single suppliers without competition.²⁸ The Department has checks and systems that aim to ensure single-tender contracts are transparent and value for money.²⁹ The Department told the Committee that it also agrees progressive reductions in cost when it negotiates single tender contracts.³⁰

12. The Department has not been able to secure the availability of spare parts that it requires, and estimates that these difficulties will not be resolved until 2015 when it expects

20 C&AG's Report Fig 1 and para 3.2

21 Q 58

22 Q 63

23 Qq 91 - 92

24 Q 58; C&AG's Report, paragraph 3.3

25 Q 91; C&AG's Report, paragraph 3.4 and figure 10

26 Qq 63 - 64

27 Qq 59 and 76

28 Qq 97 - 98

29 Q 98

30 Q 102

supply to reach a “steady state”.³¹ For example, in 2008 the Department placed an order for spares to support the deployment of Typhoon to the Falkland Islands in September 2009. By August 2010, 70% of the spares ordered had been delivered when required, 18% delivered late and 12% were outstanding.³²

13. These problems have prevented the RAF flying the aircraft for as many hours as required.³³ As a result, there were only eight of the 48 Typhoon pilots capable of undertaking ground attack missions.³⁴ The RAF told us that it grounds pilots if they are unable to obtain enough flying hours to keep their skills up to date; and five pilots have been temporarily grounded as a result.³⁵ As a result of lack of flying hours, aircraft have also been ‘cannibalised’ for spare parts to keep other Typhoons flying. This is standard practice even for commercial airlines, and negates the need to have vast numbers of spares.³⁶ On the day of our hearing, three Typhoon aircraft were being used as donor airframes for ‘cannibalised’ parts.³⁷

14. The Typhoon supply chain is complex and stretches across Europe. However, the Department admitted that it had not been managed well enough or delivered all the required parts when needed.³⁸ Furthermore, the Department had not negotiated penalty clauses for poor performance by industry within the collaborative arrangements, as doing so would risk incurring other significant costs.³⁹

15. Where possible, the Department has negotiated supply contracts with United Kingdom industry.⁴⁰ It has placed independent United Kingdom support contracts with BAE Systems and Rolls Royce based on the commercial support arrangements it pioneered for its Tornado and Harrier fleet. Under these contracts, United Kingdom industry provides support and maintenance for the aircraft, including engine spares. The contracts aim to incentivise industry to provide the Department with a set level of available aircraft. The Department told us that these contracts would give improved availability of spares and technical support. So far, these contracts had given better results and were largely meeting the Department’s performance targets.⁴¹

16. The role of the Senior Responsible Owner (SRO) on Typhoon followed the Department’s standard model of governance. Budgetary and managerial responsibility for major components, such as training, equipment, personnel, infrastructure, information and logistics, was split between different parts of the Department and the RAF. The SRO could influence the owners of each of the components of capability but did not have the

31 Q 79

32 C&AG’s Report, paragraph 1.7

33 Qq 70 - 72

34 Qq 14 and 19 - 21

35 Qq 17 and 66 - 71

36 Q 79

37 HC Deb, 30 March 2011, c389W

38 Q 55

39 Q 60

40 Q 76

41 Q 59; C&AG’s Report, para 1.8

authority to compel them to take action or make cost or performance trade-offs between components.⁴²

17. Furthermore, the Typhoon SRO lacked wider influence in the Department. For example, he did not attend high ranking meetings at which Typhoon export issues were considered, even though decisions made on exports could affect the delivery and use of Typhoon.⁴³ We consider that the role as described to us lacks appropriate decision making powers and does not provide sufficient accountability.

42 C&AG's Report, paras 3.10 - 3.11

43 Qq 123 - 124

Formal Minutes

Monday 4 April 2011

Rt Hon Margaret Hodge, in the Chair

Mr Richard Bacon	Jo Johnson
Mr Stephen Barclay	Mrs Anne McGuire
Dr. Stella Creasy	Austin Mitchell
Jackie Doyle price	Nick Smith
Matthew Hancock	Ian Swales
Chris Heaton-Harris	

Draft Report (*Management of the Typhoon Project*) proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 17 read and agreed to.

Conclusions and recommendations 1 to 9 read and agreed to.

Summary read and agreed to.

Resolved, That the Report be the Thirtieth Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

Written evidence was ordered to be reported to the House for printing with the Report.

[Adjourned till Monday 9 May at 4.00 pm

Witnesses

Wednesday 9 March 2011

Page

Ursula Brennan, Permanent Under-Secretary, **Air Vice-Marshal Simon Bollom**, Director, Combat Air, and **Air Vice-Marshal Stephen Hillier**, Director (Information Superiority), Ministry of Defence

Ev 1

List of printed written evidence

1 Ministry of Defence

Ev 20: Ev 31

List of Reports from the Committee during the current Parliament

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2010–12

First Report	Support to incapacity benefits claimants through Pathways to Work	HC 404
Second Report	Delivering Multi-Role Tanker Aircraft Capability	HC 425
Third Report	Tackling inequalities in life expectancy in areas with the worst health and deprivation	HC 470
Fourth Report	Progress with VFM savings and lessons for cost reduction programmes	HC 440
Fifth Report	Increasing Passenger Rail Capacity	HC 471
Sixth Report	Cafcass's response to increased demand for its services	HC 439
Seventh Report	Funding the development of renewable energy technologies	HC 538
Eighth Report	Customer First Programme: Delivery of Student Finance	HC 424
Ninth Report	Financing PFI projects in the credit crisis and the Treasury's response	HC 553
Tenth Report	Managing the defence budget and estate	HC 503
Eleventh Report	Community Care Grant	HC 573
Twelfth Report	Central government's use of consultants and interims	HC 610
Thirteenth Report	Department for International Development's bilateral support to primary education	HC 594
Fourteenth Report	PFI in Housing and Hospitals	HC 631
Fifteenth Report	Educating the next generation of scientists	HC 632
Sixteenth Report	Ministry of Justice Financial Management	HC 574
Seventeenth Report	The Academies Programme	HC 552
Eighteenth Report	HM Revenue and Customs' 2009-10 Accounts	HC 502
Nineteenth Report	M25 Private Finance Contract	HC 651
Twentieth Report	Ofcom: the effectiveness of converged regulation	HC 688
Twenty-First Report	The youth justice system in England and Wales: reducing offending by young people	HC 721
Twenty-second Report	Excess Votes 2009-10	HC 801
Twenty-third Report	The Major Projects Report 2010	HC 687

Twenty-fourth Report	Delivering the Cancer Reform Strategy	HC 667
Twenty-fifth Report	Reducing errors in the benefit system	HC 668
Twenty-sixth Report	Management of NHS hospital productivity	HC 741
Twenty-seventh Report	HM Revenue and Customs: Managing civil tax investigations	HC 765
Twenty-eighth Report	Accountability for Public Money	HC 740
Twenty-ninth Report	The BBC's management of its Digital Media Initiative	HC 808
Thirtieth Report	Management of the Typhoon project	HC 860

Oral evidence

Taken before the Public Accounts Committee

on Wednesday 9 March 2011

Members present:

Margaret Hodge (Chair)

Mr Richard Bacon
 Stephen Barclay
 Stella Creasy
 Matthew Hancock
 Chris Heaton-Harris

Austin Mitchell
 Nick Smith
 Ian Swales
 James Wharton

Amyas Morse, Comptroller and Auditor General and **Tim Banfield**, Director, NAO, gave evidence. **Gabrielle Cohen**, Assistant Auditor General, NAO, and **Marius Gallaher**, Alternate Treasury Officer of Accounts, were in attendance.

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL

Management of the Typhoon Project (HC 755)

Examination of Witnesses

Witnesses: **Ursula Brennan**, Permanent Under Secretary, Ministry of Defence, **Air Vice Marshal Simon Bollom**, Director, Combat Air, and **Air Vice Marshal Stephen Hillier**, Director, (Information Superiority), gave evidence.

Q1 Chair: Welcome. I do not think that we have met two of our witnesses before.

We are focusing this afternoon on just the Typhoon, having briefly looked at the Typhoon previously in the context of major projects. You will remember there that there was a question mark over whether the MOD really required the third phase of that contract, and whether we actually just went into it because of the contractual commitment and the costs that would have been incurred otherwise. So I suppose looking at the Typhoon now, in the context of this NAO Report, we have got to ask the question as to how important is the Typhoon to our defence capability, and is it sensible to focus on it? I don't know whether Simon Bollom might be the best person to answer that.

Ursula Brennan: It's probably Stephen.

Stephen Hillier: I would say that the capability is vital for defence. I say that not necessarily from the perspective of the individual platform, but looking at it in terms of the capability requirement. The capability requirement is the combat air and the ability to control airspace. In order to control airspace, you need a highly capable and highly flexible platform such as Typhoon: to be able to safeguard the UK sovereign airspace; to contribute to NATO as part of our alliance commitments and to protect NATO airspace; to contribute to, or to do, the air defence task in places like the Falkland Islands; and also for those wider contingencies, which include, for example, potential use in parts of the Mediterranean and the Middle East, as we are seeing at the moment. That control of the air capability is vital. What is also vital is that we have a multi-role platform so that it isn't just capable of doing control of the air; it is also capable of doing the air-to-surface mission. The more tasks you can get in a single platform, the more

efficient and effective you are. From my perspective, Typhoon is a vital capability that we need.

Q2 Chair: Therefore why did you consider cancelling the third tranche in 2004?

Stephen Hillier: At that stage in 2004, the Tranche 3 capability was not defined. We knew the numbers, but we did not know what we would actually be able to get within the aircraft platform, itself. Clearly there is the aircraft itself and then there is what it is capable of doing—whether it is sensors or the weapons we put on it. What was also not clear to us at the time was how we would be able to develop the aircraft that we already own contract for—the Tranche 1 and Tranche 2 aircraft. Those were uncertain factors. What we did know was that we had a requirement for a number of aircraft, which we defined there, but not the capabilities within them; and also how that played out across the wider combat air forces, for example in the Tornado force. As we then worked through subsequently, the capabilities that we would be able to get from the Tranche 3 became clearer and what we would be able to do to upgrade the aircraft that we already had became clearer, and at that point we realised that what Tranche 3 would give us was critical.

Q3 Chair: We're not going to spend too long on this, but it doesn't look to me a very credible story, because of the evidence that was given last time, and because in September 2007, we were so desperate for these aircraft that we sold 72 to the Saudi Arabians. If we needed them, why did we try and cancel Tranche 3 in 2004, and why in September 2007, did we flog off 74 Typhoon aircraft, including 24 Tranche 3, to Saudi

9 March 2011 Ministry of Defence

Arabia? So if you needed them for our defence capability, why did we sell them?

Stephen Hillier: The aircraft which we sold to Saudi were Tranche 2 aircraft, rather than Tranche 3 aircraft.

Ursula Brennan: 24 of them.

Stephen Hillier: 24 of them.

Q4 Chair: I see, “including 24”—you are right. But it would be wonderful just to have a little bit of honesty around it. It is wonderful that you tried to get out of Tranche 3, which is the evidence we got last time, which suggested to us that you didn’t want it. In the Report we have today, we see that you sold 24 to the Saudi Arabians, and yet you are trying to get us to believe that, actually, this capability of what will end up being 160 Typhoon aircraft at its maximum, was absolutely essential to our defence capability.

Ursula Brennan: Could I just attempt to put those various different facts together and see if I can explain it a bit? In the last hearing, we did discuss the MOU with Eurofighter with the partner nations regarding the numbers and the amount of money we had to spend on Typhoon, and we talked about the decision that was made in 2004–05. When we are looking at Typhoon, we are looking at it all the time in the context of the other combat air that we have got. What the Air Vice Marshal was explaining was that at the time that decision was taken about whether or not we would buy into Tranche 3, there were a couple of factors that were important. One was whether all the other partner nations were going to buy Tranche 3. So that was a conversation that was going on with all the partner nations: were we all going to go into Tranche 3, or were we going to stop where we were? The second question was: what would we get out of Tranche 3? At that time, the capabilities from Tranche 3 were not that clear. The ones we sold to Saudi Arabia were Tranche 2 aircraft. Subsequently, as we discussed in that previous hearing, those discussions internationally came to the conclusion that we would all go into Tranche 3. We then looked at our combat air requirement as a whole, looking at Tornado, Typhoon and the intention to move on to Joint Strike Fighter in due course, and we said to ourselves, “This is the amount of money that we have to spend with the contract for Tranche 3. Where does that fit in terms of our requirement?” The purchase that we made met our financial requirement in the MOU, and it also met our combat air requirement. If we had not bought those Tranche 3 aircraft, we would have had to have done something else: upgraded the Tranche 2s, which would not have been as good a deal as buying the Tranche 3s, or buy some other aircraft.

Q5 Chair: I do understand that, but I have to say to you that it stretches my credibility a little bit to think that, in 2004, you decide that you don’t want Tranche 3. I could understand if you sat there and said, “The only reason we went for Tranche 3 was that we were contractually committed. It would have cost us a bomb to get out of that, and we then had to make the best of a bad job and try and ensure that those aircraft served their purpose.” But put that together with selling to the Saudi Arabians, and you are left thinking—back to my original question—whether we

have the defence capability that we really need. I would really like an honest answer in this Committee. I think it would help us in then trying to understand the challenges you face. Then, taking it forward, you have had to take some very tough decisions in the Defence Review, and you have taken out the Harriers and you are taking out Tornado, and I just wonder, in the whole context, as the value-for-money Committee, how much cost-benefit you did on that and how much was actually simply driven by the contractual commitment, and whether we have actually ended up with what we need, or what we have to have? I don’t know, Stephen Hillier, whether you can answer that just honestly; it would be really, really helpful to the Committee.

Stephen Hillier: Perhaps if I start, and then I am sure Simon will continue on. I was involved in the Typhoon programme during this period, and, as I outlined, we didn’t know what Tranche 3 capabilities would be in 2004, and we didn’t know what we would be able to do with our Tranche 1.

Q6 Chair: You didn’t want it in 2004. It wasn’t that you didn’t know; you took a decision which demonstrated you didn’t want it—you took the billion out of the budget.

Ursula Brennan: I think to say that we didn’t want it, implying that it was a redundant capability, would be incorrect. We were in an arrangement in respect of Typhoon with an expectation that we were going to buy certain tranches. That agreement was entered into a very long time ago when we did not know what would be in the different tranches. We then got into a discussion with the other partners in that consortium, where there was a general view that people were not sure whether they were going to go into Tranche 3. That being the case, if we had all decided not to go into Tranche 3, we would have sat down and said, “How else are we going to meet our capability requirements?” At that point in 2004, it looked like people were not going to go for Tranche 3, and therefore we took the money out of the programme, as we have said previously, on a risk-based decision that in general people were not going to go for Tranche 3.

Q7 Chair: Yes, and you agreed to sell 24 to the Saudi Arabians.

Ursula Brennan: Twenty-four Tranche 2 aircraft.

Chair: It doesn’t matter.

Ursula Brennan: It is very important, and perhaps Simon Bollom or Stephen Hillier could explain the very significant differences between the different tranches.

Simon Bollom: I just think the decision to sell 24 aircraft to the Saudis was actually a diversion of 24 Tranche 2 aircraft to the Saudis, and there was an expectation that we would make up the 24 when the Tranche 3 came along, which indeed we have done.

Q8 Chair: You didn’t. I am sorry about this, and we are going to have to move on from it, but when you had done that, you had, for whatever reason, as Ursula Brennan said, taken the money out. You were hoping to get out of Tranche 3. So someone had taken

9 March 2011 Ministry of Defence

a decision around defence capability, maybe influenced by budget considerations, and said, “We’d rather not have Tranche 3,” and you decided to flog 24 to the Saudis.

Simon Bollom: If I may, the other point that I think is essential is that the point that we committed to Tranche 3 was the latest point at which the nations were able to make a decision as to whether to buy or not. At that point in time—so we are talking now about 2008 or 2009—before any investment decision of that case, you have to do a piece of operational analysis. As the PUS has mentioned, by that time we knew more clearly what capabilities would be on that aircraft and what the balance of force mix was that would deliver the best capability. All I can tell you is that at that time, the operational analysis and the supporting business case showed that there was a requirement for Tranche 3 aircraft, and that has been through all the usual scrutiny, through our Department and through the Treasury.

Q9 Mr Bacon: Can you just remind us: when you originally signed the contract, how many aircraft did you think you needed?

Simon Bollom: It was 232.

Q10 Mr Bacon: You are now going for 160, but you won’t have 160 in service for very long, will you, before it drops down to 107? How many years will you have 160 in service?

Simon Bollom: I haven’t actually got the—

Mr Bacon: Has anybody?

Stephen Hillier: It will be until the Tranche 1 fleet goes out of service.

Q11 Mr Bacon: Plainly the number will drop down then. That is a truism. I am not asking why it will drop down; it is plainly because Tranche 1 will drop out. What I am asking is: for how many years will you have the full complement of the reduced number of 160 in service?

Stephen Hillier: It will be from 2015, when we take the delivery of the Tranche 3, through until approximately 2018–19, when the Tranche 1 goes out of service.

Q12 Mr Bacon: Yes. So in other words, for somewhere between three and four years, you will have 160, which is already a reduced number from the 232 you originally said and thought you wanted when you signed the contract. You are now going to have 160 for a mere three to four years, and then you are going to drop down to 107. So all this effort that has been going on since 1987—or arguably since 1971 or however long—is going to result in 160 aircraft for three and a half to four years, and then you drop down to 107 aircraft. That is correct, isn’t it?

Stephen Hillier: It is correct, but if I can just add that it is related to the Tranche 1 aircraft, which will not only be in service for that three or four-year period. We will have had service out of them since the in-service date, which was 2003. So we will actually have had, for some of the Tranche 1 aircraft, 16 years’ service.

Q13 Mr Bacon: Obviously, at the moment, the Typhoons that are already in service have been alongside other aircraft like Tornado and so on—I understand that. I am really looking forward to the point when you have only got 107 Typhoons, and some of the others will then have gone out of service. It says in paragraph 1.13, “The Department has acknowledged that there is risk that the eventual fleet size of 107 Typhoons could result in shortfalls against mandated capability levels.” In a way, that is not surprising, given that when you signed the contract, you thought you wanted 232, and now you are going to have 107. How do you manage that risk? Do we just decide we don’t do things because we can’t—because we have fewer aircraft than we thought we were going to have originally?

Stephen Hillier: Well, it is a combination. In comparison with when we signed for 232 to where we will be, our requirement has changed. The threats that we are dealing with and our commitments have changed, and they have reduced, so that allows us to reduce the number of aircraft. Also, within the aircraft that we actually have—that reduced fleet—they will be far more capable within each individual platform than we assumed when we went for 232. They will be able to do both the control-of-the-air missions and the air-to-surface missions with a wide range of sensors and weapons. There is always a numbers element, but within the numbers that you have, the more capability and the more multi-role you can get, the more you can reduce your fleet size and balance out the operational and the threat risk against the financial consequence.

Q14 Mr Bacon: Of course, even if the aircraft has all these different capabilities, you have to have pilots who can fly them. At the moment you have only got eight pilots who can do the ground-attack role, which is a surprisingly small number. When will you have all the pilots capable of flying all the roles?

Stephen Hillier: At the moment we have eight pilots trained in the ground-attack role because that is all we need. Each bit of training is clearly expensive. Flying hours are expensive, so what we do not want to do is apply flying hours to keep people with a particular skill set that we do not expect to deploy in operations. It has actually already increased from the eight that was in the Report. Time moves on and people get trained. As we move to Tranche 2 multi-role capability in 2012, the number will increase, and it will eventually reach its peak in 2018, when we have the full Typhoon multi-role capability, because that is the stage when we need pilots trained in that wide range.

Q15 Mr Bacon: Sorry, what is the answer to my question? When will all the pilots be trained in all the capabilities?

Stephen Hillier: 2018

Q16 Mr Bacon: And that means you will have as many pilots trained as you have aircraft by 2018.

Stephen Hillier: They will never be exactly in match, because there will be experience levels and there is a constant training task, but we will have the number of

pilots with the skills we need for the operational tasks we have at that time.

Q17 Chair: It says in the Report that there are five pilots who are grounded because they have not done enough training hours.

Stephen Hillier: Yes.

Q18 Ian Swales: Can I just quickly expand on that? I don't know what the cost is, but we are talking about assets here that cost £120 million. It seems like buying a Ferrari car and then saying you cannot afford driving lessons. It seems a bizarre calculation if you have got this kind of hardware and you are saying that you cannot afford to train the people to use it. It seems crazy.

Stephen Hillier: I don't think the figure is £120 million per platform, and the figure is as in the Report. I would see it from the other direction: why would we use expensive flying hours to keep people with a range of skills that we do not expect to deploy in operations? I think that would not be a good way of doing business. It is better to focus the hours on what we actually need at the moment, and the focus for the Typhoon force at the moment is in the air defence role.

Q19 Chair: But why do we have airplanes that you do not need to fly? It is completely mad. You have got eight guys who can run it, you have got five grounded because they haven't got the training, and you have got your 170 trainee pilots whom you are sacking. Either we are wasting too much money on planes—and I think we'll come to an end with that questioning as we are not getting a straight answer on it—or you haven't got enough money to have enough people to do the job as pilots.

Stephen Hillier: Could I just come back? We have 48 pilots who are trained for the tasks that we require them to do. Eight of them are required to be trained for the multi-role task, and we have eight trained in that role. We have 48 pilots overall.

Q20 Chair: How many of the planes can do multi-purpose stuff?

Stephen Hillier: Tranche 1 aircraft at the moment, Simon?

Simon Bollom: Fifty-two.

Q21 Chair: You have got eight pilots to work on 52 planes, of whom, if you take in sickness, holiday and so on, there are probably four or five at any one time.

Stephen Hillier: We just do not need those pilots to be operating the multi-role planes.

Q22 Chair: Then you do not need the 52 planes.

Stephen Hillier: We need them for the rest of the tasks. We need it for the air defence of the United Kingdom and for all the other air defence stuff.

Ursula Brennan: Can we just clarify that in relation to the whole of defence capabilities and defence assets, there are capabilities and assets that we are using in Afghanistan which are used all the time. They are being used, they come back and they get repaired, and they go back out and use them again. A lot of the

role of the Ministry of Defence is about contingency. It is about being prepared, equipped and enabled, and having the capability. The capability consists of having the equipment, the training, the doctrine, the tactics, the weapons and so on. We have acquired the equipment—in this particular instance, aircraft—and we think of them in terms of readiness. How ready do we need to be?

Q23 Chair: I think we think in terms of sweating the asset so that you get good value for money. If you have got an asset of 52, rising to 160 and going back to 107, and you are only sweating the 52 with eight qualified pilots at this point in time, it seems to me to be very poor value for money.

Amyas Morse: There are a couple of things to pick up on, if I may. One of them you might have difficulty answering me very specifically about, but I would like at least to ask you a bit about it: what is the viable maintainable fleet size? Allowing for the fact that you have deployable aircraft multipliers—we understand all that—isn't it true that the size we are talking about is pretty low as far as having a viable fleet? Before you answer that, I would just like to also ask whether I heard you saying that we do not have the right number per platform. There is a number in our agreed Report. I may have misheard you there, Air Vice Marshal Hillier, but I got the impression that you were saying that it is not £120 million per platform. Was that what you said, or did I pick that up wrongly?

Simon Bollom: Could I come in there? That is correct. I think the MPR agreed figure was £73.2 million.

Q24 Mr Bacon: How do you calculate that into your summary?

Simon Bollom: That is the production cost of the aircraft.

Q25 Mr Bacon: What is £13.5 billion divided by 160? Production cost is £13.5 billion, and you are getting 160 aircraft. What is one divided by the other?

Ursula Brennan: This is the conversation that I think we have had several times about the distinction between whether you describe the unit cost as the development cost—

Q26 Mr Bacon: No, I am not talking about the development cost. I'm looking at paragraph 9: "The development costs of Typhoon have more than doubled to £6.7 billion...These costs are fixed regardless of the number of aircraft the Department buys". And then, a separate sentence: "The production cost of Typhoon is £13.5 billion." I am asking purely about the production cost. What is £13.5 billion divided by 160 aircraft please? I have already done the sum. You have just said £70-something million; what do you think it is?

Simon Bollom: That's what I think it is.

Mr Bacon: Tell me the answer.

Simon Bollom: It is £73.1 million.

Mr Bacon: Is it? Why do I get £84.3 million, then? Dividing 13,500 by 160 gives me 84.3.

Q27 Chair: Tim, what is your figure from the NAO?

9 March 2011 Ministry of Defence

Tim Banfield: There is a difference, I think, with Simon's number, because there is a cost of capital number coming in, but that is a production number. What we have talked about in our Report is the total cost of buying Typhoon, which is development and production put together, divided by the number of units. That is £126.25 million per aircraft, if you take the £20.2 billion.

Q28 Mr Bacon: I was just coming on to the £20.2 billion. If you divide that by 160, you get £126.25 million. That is correct?

Tim Banfield: Yes.

Q29 Mr Bacon: That is what I thought. And you are saying it is 70?

Amyas Morse: Can we do the fleet size as well, please Chair? I did ask a point about viable fleet size. I would be quite keen that we don't lose that.

Q30 Mr Bacon: Yes, because if you divide £20.2 billion by 107, which is the fleet you are going to have after only three and a half years, you get a very different figure, don't you? You get £20.2 billion divided by 107—aren't iPhones great?—and you get £188 million.

Ursula Brennan: Actually, I think if you say, "We bought a certain number and then over the years they decline", by the time they wind out and there are only two left, you can divide your £20 billion by only two aircraft. I think that it a slightly unfair calculation.

Q31 Mr Bacon: You are right that it is slightly unfair, but it's not that unfair. At the end of the day, you are buying a fleet of aircraft. You are going to have 160 aircraft for only three and a half to four years—from 2015 to 2018 or 2019, as one of your other colleagues said in answer to a previous question. So actually, you are buying a fleet that will very soon be 107 aircraft. If you divide £20.2 billion, which is the development cost plus the production cost, by 107, you get £188 million. If you divide it by 160, you still get 84. So, either of them is a higher figure than you are talking about. How do you get to your £72 million figure?

Simon Bollom: That is the unit production cost of the aircraft. We have had a long debate about what should be included and what should not be included in that figure, and the way production costs are traditionally calculated—and you can look at any nation or any variant—is to accept that the development costs, which in this case were £6.7 billion, are sunk costs. You then move into a different phase of the programme where you do production investment and production.

Q32 Mr Bacon: But even on that basis, you get a figure of £12 million per aircraft higher than yours. You get £84 million.

Simon Bollom: If I may, I think as Tim has mentioned, this is the effect of the cost of capital.

Q33 Matthew Hancock: There is one really important thing on here, which is that there have been accusations made, in this Committee and elsewhere,

that the MOD's pricing of assets and costing of assets is over-optimistic. Would you say that that has been the case in the past?

Ursula Brennan: When you say the pricing of them, you mean the forecasting and estimating?

Matthew Hancock: The costing of them and the estimates of them in advance—exactly.

Ursula Brennan: Certainly our forecasting and estimating has been proven to be over-optimistic in the past.

Q34 Matthew Hancock: And here is an example of choosing not to include certain costs, which the NAO have included, in the cost that you state as your base line. It is obviously the figure that you carry around in your head—I can see that, and it is important in your job that you do have a figure like that—but it is different from the NAO's cost and, funnily enough, it is below it. Is that not part of the cultural problem?

Simon Bollom: Can I just come back there and say that I do not think there is any difference between our assessment of the cost and that of the NAO. It just depends on what you want to include in the unit price.

Q35 Matthew Hancock: Yes, and you have chosen to include as little in there as possible, to get the number to be as low as possible.

Ursula Brennan: Forgive me, I think we really are confusing ourselves here. It is the NAO that does not include the cost of capital, as I understand it. I think the NAO don't use that 86-something figure. If you calculate it without the development costs, the NAO similarly arrives at the same place as we do, I believe.

Chair: Let us move on.

Q36 Austin Mitchell: Actually, I want to get off figures. The prevarications the Chair has talked about over the third stage are just the latest indication of a project of which you have been trying to make the best of a bad job from the start. The Eurofighter was designed for a Cold War era in which our brave lads were going to be up there fighting against MiGs in the sky in a speeded-up version of the Battle of Britain, and protecting the Grimsby fishing boats in the North sea by shooting down the Russian MiGs that came to harass them. Now that has gone. How many air-to-air combats have we been engaged in since this was agreed in 1985?

Stephen Hillier: We haven't been engaged in any air-to-air combats, but that is not to say—

Q37 Austin Mitchell: So the answer is none?

Stephen Hillier: We have not been engaged in specific combats in terms of releasing weapons and shooting down aircraft, but that is not to say that we have not required the capability through the control of the air. We have used it in the United Kingdom, the Falkland Islands and Bosnia. We have used it in northern and southern Iraq. We have used these capabilities because we need to be able to control the air. I accept absolutely that the Soviet threat, which was what was around when Typhoon was first conceived, has gone, but the capability requirement to control airspace and to have a highly capable aircraft to do that has not

gone, and the evidence has supported that over the last decade.

Q38 Austin Mitchell: Okay, the combats it was designed for have not actually happened, but it might have been useful. But to go back to 1985, it seems to me that you had three alternatives: going with the Americans, as we were offered, on the F-22, which is not yet in production but has a greater stealth capacity, which is the thing we now need in the new age; go it alone, like the French with the Rafale, because they decided not to come in; or go for a co-operative European venture, which predictably was going to be more expensive, because European Committees always produce camels when they are trying to design horses. Inevitably, European co-operation was going to be more expensive. Why, of those three alternatives, did we choose the most expensive one?

Stephen Hillier: First, obviously, I cannot say what the decision making was in the mid-1980s, but I think I would emphasise that we have not picked the most expensive option. I do not know whether there were any discussions—

Q39 Austin Mitchell: But all the problems with suppliers and spare parts seem to be because it is a collaborative venture.

Stephen Hillier: But the F-22, which you mentioned, is vastly more expensive, by any measure you wish to use, than Typhoon. I cannot comment on Rafale specifically, but within the four-nation construct, what the four nations have done is built a superbly capable aircraft. This is leading edge, and I think that is demonstrated by the high interest in the export market. This is a very good aircraft. It is not something that has absorbed a lot of money and is not giving us good deal.

Q40 Austin Mitchell: Yes, but you are now having to adapt it at enormous expense to do air-to-ground and to go out and shoot wedding parties in Iraq and Afghanistan.

Stephen Hillier: I do not accept that latter characterisation because I have significant experience in the air-to-ground mission and the care that we take in that air-to-ground mission. But, what we have done, I think, is exactly what I would hope you would want us to do. As the strategic environment changes, we have adapted an aircraft that we have already bought to give it the widest range of capabilities and allow it to participate in the maximum number of missions. We delivered the air-to-surface capability in the Tranche 1 on time and on budget for £160 million. Now, I know £160 million is a lot of money, but actually to put the capability into an aircraft in a programme of this size for that amount of money shows that we have done well.

Q41 Austin Mitchell: Okay, just to clarify, is it better than the Rafale—or whatever the French did on their own—and the F-22, as it will be?

Stephen Hillier: The Typhoon is a more capable aircraft.

Q42 James Wharton: A quick question to start with, and I do not necessarily want an exact answer, but I think you will be able to give me a rough idea. Roughly how old are the oldest Tornados that you have got in service now—that you are using?

Stephen Hillier: The Tornado went into service in 1983. I doubt very much whether there any of those original aircraft are still in service, although Simon might be able to help out there. But what I would emphasise is that what we did with Tornado was to give it a mid-life upgrade programme, at considerable expense, around about the late 1990s and early 2000s. In effect, what we have done with the Tornado is similar to the tranches of Typhoon. We took a basic aircraft and we upgraded it to make sure that it was capable of seeing through its life, and that it had the broader range of weapons.

Q43 James Wharton: I am sure you can see where I am going. Is 16 years' service from a Tranche 1 Typhoon a good lifespan for a modern military aircraft of that type that has cost that much? Is it short, is it long, or is it average?

Stephen Hillier: I think there are two points, and I am sure Simon will come in shortly. First, Tornado and Typhoon are different generations of aircraft. The Typhoon is hugely more capable and also hugely more complex. Generations have moved on, and the life you are going to get out of the aircraft, in obsolescence terms, becomes more of an issue. I think the other thing is that although we have a planning assumption for Tranche 1, what we will aim to do, absolutely, is to get the best out of these aircraft for as long as we possibly can. We continually test and adjust our plans to make sure that we get the longest life and the most capability out of the aircraft, consistent with value for money. So we have a planning assumption at the moment, but we will continue to test and adjust that.

Q44 James Wharton: So that 53 aircraft retired by 2019 is a planning assumption, and if you got the opportunity to extend the life, you will look at that.

Stephen Hillier: It is a planning assumption. We have an obligation to get the best out of the money we spend, so we continually test and adjust these plans.

Q45 Chair: But a planning assumption based on what? Based on what you think your need will be then, or based on what you think the expenditure that will be required will be—what have you based it on?

Stephen Hillier: Both those factors, together with our ability to prevent obsolescence in the aircraft. This is a computer-driven aircraft and there comes a point where it ceases to be value for money to continue to run through on old equipment. So it is obsolescence, it is the threat and it is the numbers of aircraft.

Ursula Brennan: To pick up your point about the Tornado and the life of the Typhoon, because the Typhoon comes in tranches, it enables us to say, "Is it better value to invest in putting more into upgrading a Tranche 2 or a Tranche 3 than to try and do something with Tranche 1?" The judgments that we make about how long we keep aircraft are a mixture of the threats we face, the cost of keeping an older one in service versus buying some more new ones or

9 March 2011 Ministry of Defence

upgrading new ones, the capability that we can get out of them and the extent to which it is possible to put software on. We are perpetually looking at those things and looking at the whole group of aircraft that are available to us and saying, "What is the best way of using these, and where should we be placing our investment to get most out of the thing as a whole?" That is why we have this concept of combat air, where we look at all the combat air together, not just at one aircraft.

Q46 James Wharton: I think you can say where my concern is going. I think we have to be very careful not to measure the cost of an aircraft in terms of, "That plane cost £80 million to get it on the runway." If that plane lasts 50 years, that could be really good value. If it lasts two years, it is terrible value. I just think sometimes it is over-simplified.

The other issue that we touched on earlier was about overall capability and numbers of planes. I appreciate we are talking about a planning assumption that you are going to retire 53. Obviously, the Joint Strike Fighter is going to come in and will complement some of the capability that will be lost through the retirement of Eurofighter. How can you make those planning assumptions when we do not yet know how many Joint Strike Fighters we are going to buy?

Stephen Hillier: You make assumptions about the numbers that we plan to buy, but it is a constantly evolving process. As I say, it will be the balance between the threat, the capabilities that we have between Typhoon and the Joint Strike Fighter, and affordability. It is the whole range of factors, and personally I think it would be wrong to be absolutely prescriptive and say, "This is what we will do," the best part of a decade in advance. We should have a planning assumption and continually test and adjust it from that perspective.

Q47 Chair: What is your planning assumption on the American fighter?

Ursula Brennan: We do not need to make a planning assumption about how many we buy for the Joint Strike Fighter at the moment, precisely because it is a completely different kind of contract.

Q48 Chair: But Stephen Hillier said that in his planning he has got an assumption? Are you willing to share it with the Committee? If you are not willing to share it with the Committee, just say so. Again, that will be easy.

Ursula Brennan: We think about the Joint Strike Fighter in a different kind of way, because we think about it in terms of buying it off the production line from the Americans, and we don't have to decide how many we are going to buy until much later than we would in something where we have entered into it—

Chair: Stephen Hillier did say that, in his planning assumptions on this, he had a planning assumption about how many Joint Strike Fighters you wanted. I am just interested, because the balance is an obvious question, isn't it?

Q49 James Wharton: The thing that worries me is that you can plan to retire Typhoons on the basis that

the Joint Strike Fighters are going to be coming in and so you will still have the capability, but you aren't planning for how many Joint Strike Fighters are going to come in. How are you going to be confident that you are going to have enough fast jets to meet our defence requirements?

Simon Bollom: Can I try to help here? In terms of our assumptions about Typhoon, and as my colleague has already stated, in terms of the Tranche 1, we have looked at the obsolescence factor, and we have decided that the value-for-money decision would be to take them out of service in around about 2018. For the Tranche 2s and Tranche 3s, which is the balance of the 160, we are assuming that they will run for their whole airframe life, so that will be through to—

Q50 James Wharton: The first tranche is not running its whole airframe life?

Simon Bollom: Correct, because of the obsolescence driver. Tranche 2 and Tranche 3 will run right through to 2030.

Q51 James Wharton: Thank you, I appreciate it. So just to be very clear on that, you have got 53 aircraft that have cost a lot of money which you are not running for their whole airframe life.

Ursula Brennan: Because we took a value-for-money decision that it was better value for money to invest in the Tranche 2 and 3, rather than try and upgrade to deal with the obsolescence in the Tranche 1. It is the same type of decision, as my colleague said, that we made in relation to Tornado. In relation to Tornado, you keep those aircraft going to keep the airframes through to the full extent of their life before they fall apart only by investing a lot of money. It would have made no sense to invest more in keeping an older airframe going than we could invest in a newer airframe to get the capability.

Chair: I just make a comment on this. If your obsolescence is an issue and a factor that determines how you plan and what you do, you should note that this plane took 20 years from planning to come in. You had approval for Tranche 1 in November 1987 and Tranche 1 was only completed and delivered in December 2007. Equally, this air-to-ground stuff is only going to be in by 2018. This shows that the delays in developing, producing and implementing the changes cost us even more, because the stuff becomes obsolete. That is just a comment that will no doubt be in our report, but it is an outrage.

Q52 Stella Creasy: In making your assessments about value for money, what impact does access to spares play?

Simon Bollom: A very significant impact. In terms of the obsolescence issue, it will be very much driven by the availability of the electronic spares, and principally the processors.

Mr Bacon: Can you just repeat that? The availability of?

Simon Bollom: Processors, the air electronics and the avionics. You will understand that the growth rate of processor technology is such that things have a very short cycle in terms of obsolescence these days.

Q53 Stella Creasy: I appreciate that, but can you see how worrying it is for us as a Committee to note that, for example, in December 2008 you placed an order for spares to support the deployment of the Typhoon to the Falkland Islands, and by August 2010, nearly 30% of those were either delivered late or outstanding?

Simon Bollom: If I may, that is a separate issue.

Q54 Stella Creasy: Why is that a separate issue? You are telling us that the availability of spares plays a key role in achieving value for money on these deals, but we are seeing consistently that spares are not being delivered?

Simon Bollom: Right, the first bit is on the decision about supporting a fleet. So the value-for-money judgment is made through life on the basis of being able to supply the right technology and the right spares to the aircraft in time. The piece that you referred to in the note there was about the availability of those spares at the time. So it is a supply chain issue. So it is slightly different. The deficiencies that are referred to in that Report are about production, not about the obsolescence and technology.

Q55 Chris Heaton-Harris: If that is true, what have you done? I am very lucky because I have been on the Armed Forces Parliamentary Scheme with the RAF twice. In 2001, I was in Akrotiri and there were three Jaguars on the floor being cannibalised—robbed for parts—to keep one plane going for the northern no-fly zone over Iraq. I was told at that point in time that there was going to be a just-in-time thing around the corner that was going to guarantee that future airframes would not have the same problems that airframes had at that point. Eleven years later, you are telling us we have exactly these problems again. That surely cannot be right.

Stella Creasy: You still can't get the bits that you need to keep the planes in the air.

Simon Bollom: We have a very complex supply chain that stretches all over Europe. I won't try to pretend that that supply chain has been absolutely seamless in delivering the parts exactly.

Q56 Chris Heaton-Harris: Are there any Typhoons on the ground now that are being robbed for parts to keep other Typhoons in the air?

Simon Bollom: Almost certainly. Every aircraft fleet in the world—

Q57 Chris Heaton-Harris: We have planes that we have spent £70 million to £120 million on. Can you understand my frustration that nothing has changed—or seems to have changed—in the last 10 years?

Simon Bollom: The alternative approach to this would be to buy a hell of a lot more spares at the front end, which would mean a much bigger initial provision.

Q58 Stella Creasy: Can I, with respect, suggest a third option: you negotiate late-delivery penalties into your contracts for your spares?

Simon Bollom: Yes, on the face of it, that would seem to be the right thing to do. I think what I would say is that we have got a quadra-national organisation

here. We have got four nations involved in this, four partner companies, and a whole raft of suppliers across Europe.

Q59 Stella Creasy: You have had that since the start of the contract. What have you learned in the various tranches? These problems are not unique to the last couple of years, are they?

Ursula Brennan: If you look in the Report, at paragraph 1.8, the NAO confirms that we have been learning from the early experience of that multi-national reliance on spares and certainly, in some cases, because of the way that the aircraft is designed and built, the spares have to come from international sources. But if you look at the Report, it points out that we both have been improving our arrangements with our partner nations and, where we have got contracts of our own, getting better results out of those.

Q60 Stella Creasy: So have you negotiated late-delivery penalty clauses in the contracts? If you are learning from it, have you negotiated so that we can claw back money if the fact that we are not getting parts means that you guys can't get the planes up in the air or you have to cannibalise the planes that you are flying?

Simon Bollom: That is not the way we have set these contracts out. Can I just go on to qualify what we have done? If you set up a contract of that nature, there will almost certainly be a huge risk element that you have to pay for in the capital cost of spares. The way that we have structured this is to put in place an availability service onshore with BA Systems and Rolls-Royce so that we incentivise them, not necessarily to give us spares or repairs in separate stove pipes, but to provide us with aircraft availability. We signed up to that contract at the end of 2009, and what we anticipate is that we will get very much improved availability of spares, as well as technical support and aircraft out of maintenance. What we are looking for is a holistic support capability.

Mr Bacon: But with respect, Mr Heaton-Harris was being told ten years ago when he was at Akrotiri that we were going to have a system that was guaranteed. You have referred to the nature of the quadra-nation contract and how that makes the supply chain more complex. For me, one of the most surprising sentences in this report, Ms Brennan, is where it says in paragraph 11, on page 7: "The Department did not anticipate the potential of these arrangements"—that is to say the rigid, collaborative work-share requirements—"to drive additional cost into the project." Why not? Isn't it blindingly obvious that if you do it in four countries rather than one, and you have rigid, collaborative arrangements that involve individual circuit boards travelling around Europe to have other things done to them, it is going to have potential, to say the least, to drive additional cost into the project? Isn't that blindingly obvious?

Q61 Chris Heaton-Harris: Can I reply to that? At the time when I was doing the Parliamentary Scheme—I am sorry, it was Interic, not Akrotiri, I apologise—I went to Shrivenham where there was the

9 March 2011 Ministry of Defence

joint training university for the joint services, and I was sat in a room where people were just drooling about what was going to come forward with the Typhoon and thinking about these exact issues that we are talking about today. So somewhere in the MOD, these thought processes were going through; but when it actually came to the crucial point of doing the contract and the ordering and all this project management stuff, it disappeared.

Simon Bollom: I don't think it did disappear. I would refer back to what I talked about earlier about trying to put in place an arrangement, which has actually been very successful on Tornado and Harrier. Indeed, the NAO did an investigation into fast-jet support arrangements and we saved something in the order of £1.4 billion. So, going back to your Jaguar days, I believe we have learned from that. We have implemented new logistic support arrangements on Tornado and Harrier. The aircraft Typhoon is now at a sufficient level of maturity, technicality and production that that is exactly the sort of arrangement that we are going to capture on Typhoon.

Q62 Nick Smith: So exactly how many Typhoon aircraft are being cannibalised for spare parts today?

Simon Bollom: I'm afraid that I couldn't tell you off the top of my head.

Q63 Mr Bacon: What is the answer to my other question? Why didn't the Department anticipate the potential of these rigid, collaborative work-share arrangements to drive additional cost to into the project?

Ursula Brennan: We are talking about decisions that we made back in the 1980s. If you look back that far, I don't know to what extent we had had much experience, frankly, of working in collaborative arrangements.

Q64 Mr Bacon: But isn't it blindingly obvious that if you have rigid, collaborative arrangements where you share out the work in four different countries, and you have, as I said, individual circuit boards travelling around Europe to have an extra process added to them, that is going to increase costs? You don't need much experience of that to surmise that that will increase costs.

Ursula Brennan: I think the point is not so much that people didn't think, "Will involving four nations increase the cost?" It is the extent to which people anticipated that correctly. It is worth noting that in relation to the UK, we, as users of the Typhoon, have a much leaner approach to support costs than any of those other partners. So, we are in a multi-national organisation, but in support terms, we are actually working this aircraft more efficiently and more cheaply than our other European partners.

Q65 Mr Bacon: The whole point about these Kawasaki supply chains and all the rest of it is that they work. You get it just in time. You don't sit there grounding pilots because you don't have aircraft that can fly, which is what you've got. It is all very well them being lean, but they also have to work—and they are not working, are they?

Ursula Brennan: It is not true to say that they are not working.

Q66 Mr Bacon: They are not working adequately. In paragraph 1.10: "In 2010"—that was just last year—"the RAF temporarily grounded five pilots." Why were they grounded?

Simon Bollom: I can't disagree with what you have said.

Q67 Mr Bacon: Sorry, what is the answer to the question? Why were they grounded?

Simon Bollom: I was going back to what you said earlier. We didn't have enough flying hours at that time.

Mr Bacon: No.

Ursula Brennan: That is the answer.

Q68 Mr Bacon: Sorry, you are talking about trained pilots?

Simon Bollom: You asked me why they had grounded, and it was because we couldn't generate enough flying hours at that time.

Q69 Mr Bacon: You mean you didn't have planes that would fly?

Simon Bollom: There were a number of reasons why.

Q70 Mr Bacon: I am trying to get this in clear, plain English that I can understand because I am not sure I understood your answer. The Report says: "the RAF temporarily grounded five pilots." Why were the pilots grounded?

Stephen Hillier: The reason why we would do that would be because they were not getting enough flying to maintain their currency and skills. I should point out, though, that this happens not just with Typhoon; it happens in other—

Q71 Mr Bacon: Okay, let's just pursue that for a minute. Why weren't they getting enough flying hours?

Stephen Hillier: I will ask Simon to step in, but it can be a combination of spares, engineering manpower and just overall availability of the flights.

Q72 Mr Bacon: Right, so when Ms Brennan said the lean supply chain is working, it actually is not working, because if it was, you wouldn't be grounding pilots due to lack of spares.

Stephen Hillier: It is not working, perhaps, in all circumstances, but in terms of context, the RAF has flown the same number of flying hours as all other nations combined, so we are getting far more out of aircraft. In that context, the spares and support arrangements are working well.

Q73 Stella Creasy: There is a much more pertinent question here, with respect. I absolutely appreciate that the decision for the original contract was made in the 1980s and you were not privy to it, but why has it taken until 2009 for you to renegotiate a contract—even with carrots let alone any sticks in it—about the spares issue?

9 March 2011 Ministry of Defence

Simon Bollom: I go back to what I said earlier. We went through a learning experience. We pulled that through from Harrier and Tornado, and actually getting in place the sort of commercial arrangements that you are talking about that lock four nations and a whole raft of European suppliers—

Q74 Stella Creasy: So you are saying none of the other nations expressed concerns about spares issues, and nobody, until 2009, thought, “Actually we need to get to grips with this?”

Simon Bollom: Not to the same degree.

Ursula Brennan: We have been driving this.

Simon Bollom: I think there is one important issue that I just want to refer to, and that my colleague raised. We fly more flying hours than the other nations put together. That just happens to be the case.

Q75 Stella Creasy: In terms of the value for money of these contracts—leaving aside whether or not you should have some sticks as well as carrots to deal with the under-supply of your supply base and your spares—to not learn or deal with the difficulties in your supply chain until 2009, given that the contract has been running for 30 years, is—

Ursula Brennan: It is just worth saying that it is not true that we waited from 1985 until 2009 and then woke up one day and said, “Let’s renegotiate the contracts.”

Q76 Stella Creasy: So what stopped you doing it before?

Ursula Brennan: There are two ways in which we have been seeking to deal with support and supply arrangements in relation to Typhoon. One is in relation to the international joint arrangements, and there are certain things that we have to do jointly. This is a jointly built and designed aircraft. That is the point about it being a multi-nation capability. There are things that we simply cannot do ourselves. So where we are talking about that multi-nation capability, we have been working with the joint partners to seek to improve the efficiency and effectiveness of that process, and we have been working to reduce the number of contracts to get the contracts working more slickly. The second thing that we have done is to identify the areas where we can set up our own UK independent contracts, and where we have been able to do that, the NAO points out that we have done that in a way that is working effectively.

Q77 Stella Creasy: Is that the cannibalising of other planes, then?

Ursula Brennan: No, cannibalising planes is something that is in the RAF’s bloodstream. It is a thing they do with all their aircraft, because it is the best way of ensuring, when you have aircraft in different places of different natures to do different tasks, that you get the best out of the fleet you have. I doubt if we will ever arrive at a world where they won’t want to take them apart and put bits on other planes.

Q78 Nick Smith: Can Air Vice Marshal Hillier tell us today how many of the Typhoon aircraft are being cannibalised for spare parts?

Stephen Hillier: I can’t give you that, because it is a constantly changing picture. Now, cannibalising could mean that you have two Typhoons on the flight line, and one requires a very minor change of a part from one aircraft into the other. That would count as cannibalisation in this context. I don’t think you would ever be able to put in place a support arrangement that was as quick and as agile as that. That is the immediate level. There is a broader impact, which is aircraft which are cannibalised over a longer term. But as I say, it constantly changes on a day-to-day basis according to the needs. What the RAF engineers are extremely good at doing is taking the assets available and maximising their utility and service ability to get the most flying hours out of them. So we can stop cannibalising aircraft and we would get fewer flying hours.

Q79 Nick Smith: Have you got a programme that reduces that to the very barest minimum? What would be your target for as many aircraft to go into the air as possible and not be kept on the ground? Because using your example, one in two could be out.

Simon Bollom: The alternative, if you wanted to guarantee that you would never cannibalise an aircraft, would obviously be to buy a lot more spares upfront, and those spares would be poorly utilised. So we have to balance those two things. What we try to do is to get as lean a buy of spares as possible, and then for exceptions you have always got the option of cannibalising. Even the airlines do this. So when do we think we will get to a steady state? Bear in mind as well that we are approximately 50% of the way through aircraft delivery. It won’t be until 2015 that we get the last of our Tranche 3 aircraft. At that point we will have had all of the spares that we have built into our calculations delivered. We are on an upward ramp, and I would ask members of the Committee to bear that in mind. We reach our steady state in 2015.

Q80 Chris Heaton-Harris: So is there a guarantee that you can give the Committee? First, I don’t buy the minor parts thing at all. If UPS, DHL and every other company in the United Kingdom rely on their logistics being just in time, minor parts should be able to be shipped around the world pretty damn quickly. But on major parts—I know that bird strikes come out of the blue and cause huge problems for canopies and stuff—I can understand the argument you are making. Can you give the Committee a guarantee that not only will things improve, but we will be in a situation where we do not have to moan at you on this sort of thing in five or six years’ time?

Simon Bollom: I don’t think we are in a position to provide a guarantee anything in the future. All I can tell you is that we have put in place the availability services and we have reformed the supply chains, and I expect those to be able to deliver the output that we have planned.

Ursula Brennan: And they are delivering now. The ones that we have put in place are currently delivering.

9 March 2011 Ministry of Defence

Q81 Ian Swales: Just quickly on your comment about the output demanded, figure 5 in the Report shows flying hours achieved against your requirement, and the situation has been getting worse. The number of hours achieved has actually gone down in the last year shown here, and while your requirement did go up, you took it down because you slowed the rate of pilot training. But the gap between the two is quite large, and has got worse since 2007–08, so clearly there is an issue. I don't know what is going to happen in 2010–11, but this is painting a terrible picture.

Simon Bollom: I did take the precaution of checking 2010–11, which obviously closes out at the end of this month—the end of this financial year.

Q82 Ian Swales: What do you think the figures will show?

Simon Bollom: They are back up at 10,800, so we are back on the upward climb, and our plan for next year is 13,000.

Q83 Ian Swales: What was your requirement this year? You think that 10,800 has been achieved this year; what was your requirement?

Simon Bollom: That is what we set out to do, and that is what we are on track to achieve.

Ian Swales: Okay, that is good news.

Q84 Stephen Barclay: Can I first just clarify something that was said to Air Vice Marshal Hillier earlier? I do think a lot of care is taken on the air-to-ground missions, and I think officers have to take extremely difficult decisions. I wouldn't have wanted the Committee to have given a misleading impression on that.

Can I come to the Report at paragraph 1.4 on page 16, which says that the Typhoon is unlikely to be the ground attack of choice until 2018? Was that part of the cost-benefit analysis that was done in 2009 when you made the decision on the Tornado F3?

Stephen Hillier: Sorry, is this air-to-surface we are talking about?

Stephen Barclay: Absolutely. Let me clarify. In 2004, you took a decision to spend £119 million to upgrade the early Typhoons to deliver ground-attack capability. That was introduced in July 2008, and yet the very next year you took a decision to cancel the Tornado F3 and divert the Typhoon, and spent a further £48 million upgrading the Tornado GR4 in order for it to be the aircraft of choice for ground missions in Afghanistan. You are now saying that it won't be until 2018 that the Typhoon is the ground-attack aircraft of choice. What I am trying to understand is, having spent that initial £119 million to upgrade the Typhoon and then taken a decision to divert it, what cost-benefit analysis was done in 2008–09?

Stephen Hillier: If I can go back to 2004, first of all, because a cost-benefit analysis was done then against the Jaguar force. What the RAF wanted to do was reduce down the number of types that we operated, because that's where you get significant savings, so we took the decision to retire the Jaguar force early. In order to mitigate the reduction in ground-attack capability, which we had resolved, that was when we

put in the plan to give Typhoon Tranche 1 an air-to-surface capability. I think Jaguar went out of service in 2007, and in 2008 we had that initial ground-attack capability in the Typhoon. The ground-attack capability we put in Typhoon at that stage was a generic one, and it was at a relatively low level of ground-attack capability. At that stage, we were not in Afghanistan in the way we are in Afghanistan now, so that was all going to be in the future. When it comes to looking at the forces required for Afghanistan, Tornado remains our most capable ground-attack aircraft. Typhoon was not at the same standard, and so Tornado was deployed to Afghanistan, and Tornado remains our most capable ground-attack aircraft. In relation to 2008, I was not involved in that decision making at the time—perhaps Simon may be able to help me out. We then made another decision: if we run down the Tornado F3 force earlier and try and get it out of service and therefore save us money, how then would we mitigate the absence of the Tornado F3? The most cost-effective way was to dedicate the Typhoon to that task, and therefore to work it that way. So, what you have got is a Jaguar force, a Tornado F3 and a Typhoon force, and we have tried to get ourselves to the point where we just have the Typhoon force. We are focused now on the air-to-air role, because that's what we needed it for. We have got the Tornado to cover the ground.

Q85 Stephen Barclay: What I am trying to understand is two things, really. First, to what extent has that £119 million delivered value for money, and to what extent have the Typhoon and those upgrades delivered anything tangible? Secondly, the decision to then divert the Typhoon in 2009 has, I suspect, delayed the multi-role capability of the Typhoon. That has a knock-on effect on a whole range of issues, not just deployment to Afghanistan, but, for example, in terms of exports, which has a big impact on the production cost and the unit cost. What I am trying to understand is: when you took that decision in 2009 on the Tornado airfighter, to what extent was the cost-benefit analysis picking up the points we now see in this Report?

Stephen Hillier: If I can take the points in order. On the money that we spent on the Tranche 1 multi-role, clearly, the investment and the decision was taken in relation to the retirement of the Jaguar. We delivered that air-to-surface capability on time and on budget, and it mitigated the risk.

Q86 Stephen Barclay: But you don't use it?

Stephen Hillier: We don't require it at the moment. We could use it. It is at readiness. If we want to deploy that aircraft on an air-to-surface mission, we can do it. Why don't we do it in relation to Afghanistan? Because it does not have the full range of weapons.

Q87 Stephen Barclay: You have already got other kit that does that, so we have spent £119 million delivering an extra capability that is less than we already have on other planes, and we have those other planes we can use instead.

Stephen Hillier: But that is the world as we know it now. When we made that decision, it was not just in

9 March 2011 Ministry of Defence

relation to the capabilities on the aircraft. We have a requirement for a number of aircraft capable in that role, and it was the retirement of the Jaguar that meant that we needed more aircraft that were capable in that role, and we used the Typhoon. But as I say, we continually test and adjust our plans. Threats change and operational requirements change. As I say, we can use it in that role; we have just chosen not to.

Q88 Stephen Barclay: Sure, but that role has been delayed, because it is now not going to be until 2018. I am trying to understand the extent of the delay as a result of the decision taken in 2009. If you took the decision in 2004 to deliver ground capability for Typhoon, had you stuck with that original decision, by what point would you have expected, in your professional judgment, the Typhoon to have become the ground-attack aircraft of choice?

Stephen Hillier: The timelines that we will roll out are the timelines that I would expect, because we have been talking about Tranche 1 aircraft. Tranche 1 aircraft will only get to the standard they have got now on the air-to-surface mission. At the moment we have an upgrade programme running on the Tranche 2 aircraft to bring them up to the multi-role standard. That will deliver next year, and you will have Tranche 2 aircraft of that standard. Why isn't it earlier? Because we need to approach it in an incremental-acquisition way, to make sure that we do not add in too much technical risk early on. It is also a four-nation programme, which gives us better value for money because the cost is shared, and the four nations need to align the requirements. As I say, we will deliver that in 2012. Those later capabilities, which will bring us to that full standard in 2018, is again part of that incremental, multi-national upgrade programme, gradually increasing new weapons capabilities as we go along. It is a technical issue and it takes time to write the software, do the flight clearances and do the trials work for this wide range of weapons, and we are doing this in a measured, paced way, because that reduces the technical risk and the possibility of failure.

Ursula Brennan: Just to clarify, 2018 is not late; it was when we expected to have the full multi-roles. We did not delay it. It was always intended to build up to that point.

Q89 Chair: Do you really think the four-nation capability is good value for money?

Stephen Hillier: If we weren't in the four-nation construct, we would not be able to afford this by ourselves.

Matthew Hancock: That is a different answer.

Ursula Brennan: If you want sophisticated technology that is capable of combating the threats that your assessment tells you that you need to face, we could not have done that on our own. This was, therefore, the best value way of doing it.

Q90 Chair: Might it have been better just to buy it from the Americans?

Ursula Brennan: I think Stephen Hillier pointed out earlier that the American aircraft was more expensive.

Stephen Hillier: The particular example that was quoted will not be able to do the range of multi-role missions that the Typhoon will be able to do.

Q91 Austin Mitchell: Given that we have more of them, that we are using them more intensively, that we want to upgrade them for air-to-ground attack, and that the major contractors are British Aerospace and Rolls-Royce, as well as the fact that there are delays in getting collaborative agreement—part 3 of the Report says, on page 29, that decisions on upgrades are expected in 40 working days, but the others don't meet that—what is to stop us from going it alone on the rest of the contract, on the spares and the maintenance, and on the upgrading?

Stephen Hillier: I will ask Simon to comment shortly, but it is a fact that the UK does not have the full range of skills. It would be inefficient, when you are in a four-nation programme, for all to duplicate and have the same level of skills. We are simply not able to do the upgrades without the co-operation of the other nations.

Q92 Austin Mitchell: What are our deficiencies in this range of skills?

Simon Bollom: Very simply, at the outset of the programme, 37% of the design is onshore. The rest of it is offshore. So yes, British industry might have the skill base to do that, but in terms of setting up the equipment, the software engineering and training the people to do the job, there would be quite significant costs there.

Q93 Nick Smith: You missed some key costs in the original approval for support, such as major maintenance. I see from the papers that the estimate for that at the moment is £16.6 billion. How are you going to stay within the cost approval for maintenance support when some of it is dependent on the collaborative arrangements you have already talked about? You talked about the complexities and time delays in supporting aircraft that we would like to see in the air. How are you going to make sure that you keep within the cost approval?

Simon Bollom: We have got a support approval that caps us at £13.1 billion. The estimate at the time that this was done was that if we change nothing, it would cost us £16.6 billion. So what we have put in place is a number of support-chain improvements, and I have mentioned one which is the availability service with BAE Systems and Rolls-Royce. The other significant ones are changes to the international contract that supplies us with avionic spares, and in particular, the most costly sensors, which are the defensive aid suites and the radar. I think we have got about 65% of the high-value avionic spares under this new contracting arrangement, which gives us a high degree of confidence that we will be able to deliver the required output from within the approval afforded.

Q94 Nick Smith: So you don't think you are going to come back to us in five or three years' time, and say, "Actually, it has cost £20 billion."?

Simon Bollom: I sincerely hope not.

9 March 2011 Ministry of Defence

Q95 Chair: The interesting thing is that these are the contracts with BAE and Rolls-Royce, right?

Simon Bollom: The first two that I mentioned are, and the other ones are international contracts.

Q96 Chair: Okay, but they were negotiated; they weren't tendered?

Simon Bollom: You are absolutely right; they are single source.

Q97 Chair: How can you then satisfy us or yourselves that you are getting value for money? Presumably you have put in tougher clauses to ensure delivery. Also, how are you, in the current climate, negotiating with BAE and Rolls-Royce to drive down costs? That is two questions.

Simon Bollom: In terms of the first question, we came to the conclusion that given the technology that we had got, and the way in which the work share is constructed, a competitive approach to future support was just not viable. There were no credible bidders into that environment. It then becomes a case of: how do we actually sweat the industry that we have already got and how do we drive best value out of it? I think I would just observe that in getting us down from the £16.7 billion to £13.1 billion, we have actually made quite significant progress.

Chair: But you don't still know. So you have driven it down.

Simon Bollom: We have. We have still got to go further, yes.

Chair: I am just interested, these are big sums and you have decided there is nobody to compete in the market. How do you do comparisons?

Q98 Stella Creasy: If you do not have anyone to compare tenders with, how are you making an assessment when they come back to you and say, "Well this is the revised price we can do."? You talked before about using incentives rather than sanctions. I was wondering if you could say a bit about what those incentives are.

Ursula Brennan: It might be worth commenting on the principle of what we do when we go single source, because for a significant, though minority, proportion of what we do in defence, there is not more than one supplier. There is only one place where you can get something from, and we sometimes find ourselves negotiating a contract with someone where they are going to be the only supplier. In terms of this sort of thing, where you are talking about very high-end capabilities, the reason it went multi-nation in the first place was because we didn't have it within the UK. Then within the UK, if you are talking about looking at UK suppliers, you are going to be down to one. We have a regime under something called the Yellow Book, which is the regime that guides contracts that are done in government when they have to be done single tender. There is a whole set of checks and systems that we go through to ensure that when we do a single-tender contract, we do it in accordance with those rules around transparency and around how we are going to ensure that we get value for money. At the moment, we are having a review of that Yellow

Book to make sure that we are getting absolutely the best value out of those single-tender contracts.

Q99 Chair: What is BAE's profit margin on it, then?

Ursula Brennan: BAE's profit margin as a company?

Chair: From its contract. If it is all transparent, what does it make out of it?

Stella Creasy: Does the Yellow Book set a profit margin?

Q100 Chair: No, not the Yellow Book. I am just interested, because we need comfort that in those negotiations with a single supplier, you are eking out best value for the taxpayer. You said one of the techniques used is transparency, so do we know how much money BAE makes out of the contract?

Simon Bollom: Yes, we do.

Q101 Chair: What is it then?

Simon Bollom: I don't know the answer to that, sadly, now.

Q102 Chair: Could you let us have a note?

Ursula Brennan: I will check whether that is information that we can reveal to you in contractual terms. On that basis, if we can, I will do so.

Chair: I don't see why you shouldn't.

Ursula Brennan: One of the ways in which we negotiate these contracts is to agree progressive reductions in cost. We have actually identified reductions in support costs that we aim to achieve through these contracts. One of the things we do when we go single tender is actually to say, "This is how the price must come down through efficiencies from the contract over a period of years."

Q103 Chair: So what are the efficiencies on the BAE contract or on any of the contracts: the Rolls-Royce one, the BAE one, the international one? I don't mind which one. What efficiencies per annum are you looking for?

Ursula Brennan: We have identified £3.5 billion of efficiencies through the support of this aircraft over its lifetime.

Chair: That is £3.5 billion from the £16 billion?

Q104 Mr Bacon: Is that basically the difference between the £16.6 billion and the £13.1 billion?

Ursula Brennan: Yes.

Q105 Mr Bacon: Yes, okay. Can I just pursue this, because as it says at the bottom of that paragraph that is talking about the £16.6 billion and the £13.1 billion, it makes the fairly obvious point that as the number of aircraft has fallen by a third to 160—although of course it is actually going to go a lot lower than that; as we have established it is going to go down to 107 quite quickly—the unit cost of support per aircraft has risen by approximately a third on a like-for-like basis. Of course, eventually it will be more than that. That is where your efficiencies come from. My concern is alluded to in paragraphs 13 and 11, and also in paragraph 2.14 on page 27. Paragraph 13 states that if you are not careful, the "costs of under-utilised industry assets will be passed on to the Department on

9 March 2011 Ministry of Defence

its remaining contracts—notably Typhoon.” Paragraph 2.14 says explicitly—

Stella Creasy: “84% of forecast support costs are not currently contracted for.”

Ursula Brennan: There are three distinct points that are worth picking up quite separately there. On the latter point about 84% of forecast support costs not currently being contracted for, we are talking about over the lifetime of the aircraft until 2030. We would not expect to be on contract for some of those costs now. So that is No. 1.

Q106 Mr Bacon: I am sorry, I referred to paragraph 2.14 when I meant to be reading from 2.11. I was going to come on to the 84% point, but the relevant sentence is, “Unless industry is incentivised to restructure to manage this reduced workflow, there is a risk that under the existing arrangements, the costs of under-utilised industry assets will be recharged to the Department on its remaining contracts, notably Typhoon.” In other words, that is what the current contracts allow. You can be alert to that risk, but how will you—

Ursula Brennan: Following the SDSR, we are engaged in negotiations with all our major suppliers about liabilities. The Yellow Book regime indeed provides for the presumption that if we have required a sector of industry to keep going in order to provide us with a service which we cannot get from anywhere else, the liability lies with the Government at the end of that contract. That is part of the deal of the Yellow Book. We have a review of the Yellow Book under way at present to make sure that those conditions are as effective and efficient as they should be. We have negotiations going on with all our major suppliers, following the SDSR, to identify liabilities and to ensure that the Government are getting the best possible deal from its major suppliers in that context. So across companies like BAE Systems and Rolls-Royce, and across all of the things that they provide for defence, we are currently engaged in negotiations.

Chair: God knows how you are measuring it.

Q107 Matthew Hancock: Following on from exactly that point, and without prejudicing the review to the Yellow Book, do you think that it is sensible that all the risk of under-utilising industry assets should fall to the Government?

Ursula Brennan: One of the things we do when we do a deal, when you have to keep a capability going and you have had an end of life, is to ensure that we don’t simply end up where the production line stops and then—bang—a large amount of cost lands back in the lap of the Government. There are all sorts of ways you can deal with that. Some of them are to do with whether you are expecting to have other equipments flow through the pipeline, and some of them are to do with the way you incentivise industry to bring those costs down over a period of time. There is a variety of things that we have in particular contracts and that we are doing across the various sectors as a whole, so this is a very live issue.

Q108 Matthew Hancock: You have just explained how you manage the fact that the risk all falls on the

Government, but my question was: do you think it’s sensible that all the risk falls on the Government?

Ursula Brennan: Sorry, I didn’t mean to say that all the risk falls on the Government. If we say that we require industry to keep a production line, and a design and development thing going, to provide us with sovereign capability, we are paying for that, and if we don’t do anything about it, the Yellow Book will say that the risk falls on the Government.

Q109 Matthew Hancock: Yes. Do you think that is sensible?

Ursula Brennan: Whether it is sensible or not, if we want that capability, we have to pay for it. The review of the Yellow Book is to try and get us to a generic different position. At the moment, we deal with it in individual contracts and individual sectors. In the submarine sector, the ship-building sector and the fixed-wing sector, we deal with those costs across the piece, but we are looking at the Yellow Book just to make sure that the rules are as sharp as they could be.

Q110 Matthew Hancock: And is one of the consequences of this rule that if you need to change future capability, once you have signed a contract, the cost of getting out of that contract can then be higher than the cost of carrying on with it? That’s where I want to get to.

Let me give you a more specific question: you described quite eloquently how the threats have changed and therefore the requirement for the numbers of units has come down from 232 to 160. You also explained how, because of the huge amount of time that this was in gestation, capability per unit also went up, and therefore I think there is a very understandable explanation of why that number came down from 232 to 160. If that 160 number needed to change for whatever reason, for instance because there was an SDSR and you looked at the mix and wanted to change it, are we constrained from making a change to fit the military strategy, because of the contracts and the Yellow Book arrangements, which means that we pay for these things whether we buy them or not?

Ursula Brennan: When we are looking at choices about capability, you never have two completely separate buckets, one of which is called, “What would I like to have?” and another which is called, “Money”. You are perpetually looking at those two things together, and all of the time, you are saying, in terms of the opportunity costs of the money I have now, facing the challenges that we face, “What would be the best way of spending the money?” If you came to a point where you said, “We are at the end of the line,” and suddenly aircraft are no longer needed—

Q111 Matthew Hancock: No, please, if you listen to the question and then respond to it. I entirely accept that from a strategic point of view, but the question is: are you not constrained in your strategic choice by the contract and these Yellow Book arrangements, as opposed to by the needs and the costs were you to have a more flexible contract?

Ursula Brennan: It is certainly true that more flexible contracts of the kind like the JSF make it easier for

9 March 2011 Ministry of Defence

you to turn the tap on and off, and that is one reason why we are contracting in that way for the JSF.

Q112 Matthew Hancock: So do you wish that you had contracted in that way for this?

Ursula Brennan: First, that option was not available when we contracted.

Q113 Matthew Hancock: You could have written a different contract.

Ursula Brennan: It wasn't open to us. Simply, as I have said right from the start, the reason why this is a multi-nation contract is because it wasn't possible for us to do this all on our own. If we had, it would have cost us an enormous amount more, so it wasn't possible.

Q114 Matthew Hancock: You had influence in that; you can't pretend that nobody made it up. Somebody wrote the contract.

Ursula Brennan: No, but the point is that the JSF is an American-built aircraft with a massive production line and it is possible to envisage rolling them off in those kinds of numbers. You can do different kinds of contracting when you are in that business. In this particular instance, is it the case that, if we suddenly wanted to do something different, we would be in a position where we would be tied up in the contract? It is difficult to conceive of a circumstance where you would suddenly want to turn something on and off. We don't approach things in that way. It is very rare that a capability suddenly ceases to be useful overnight.

Q115 Matthew Hancock: Yes, but there are changes, which you described very clearly.

Ursula Brennan: There are indeed changes, but the way we deal with that is precisely by these negotiations that we have with suppliers and sectors. We look ahead and we say, "Where do we think the fixed-wing sector is going? Where do we think Typhoon is going?" That is how we negotiate with our suppliers, so that we don't have those cliff edges.

Q116 Matthew Hancock: I would accept that, except for the fact that going to the big picture, which I know that this hearing isn't about, that all sounds a perfectly reasonable way of doing things, had you not got yourselves into this situation where the supply tube was overcommitted to the extent that it was as we have gone through several times in this Committee? Do you see what I mean? When you come to a decision about how to make sure that future cash and future commitments are consistent with each other, you were heavily constrained by the contractual and Yellow Book arrangements around Typhoon. Is that not true?

Ursula Brennan: I'm not sure that it is true. Are you going back to the Tranche 3 decision?

Matthew Hancock: I am going back to the decision over whether to change the 160 number.

Ursula Brennan: In relation to Tranche 3, we arrived at a point when we were clear what the Tranche 3 capability was, and we had a set of choices. We could have said, "Shall we stop doing this?" And there

would indeed be a liability in relation to the MOU with Eurofighter. We could have said, "Let's pay that liability and invest in JSF," but JSF was further off—it is not there yet. Conceivably, I don't know, we could have said that we might have thrown some more money at Tornado, but that can't be kept going forever. So actually, in practice, we did indeed have a contractual arrangement in relation to the Tranche 3, but it also happened to be that it was available at the right time and in the right numbers to meet our capabilities. We didn't buy it because we were forced to buy it. JSF, which might have been another choice, is not available yet and is not yet flying. I guess we could have said, "Do we want to invest more in Tornado?", but Tornado can't be kept going out to 2030. I know it might sound convenient, but it is actually the case that our contractual commitment in relation to the Tranche 3, and our requirement for capability, came together to make this the right decision to make. That is why the business case made this the right decision to make.

Q117 Chair: We hear that, but we are going back over old ground. This must be our fourth or fifth hearing with the MOD and what comes up time and time again is that you are locked into these contracts or you are locked into expenditure, and that drives decision making. Whether, as you are trying to justify to us now, it suited your defence intent or not in this particular instance is open to question, but you are locked into it, and it never appears that the MOD tries to engage in a much more flexible way, which may cost more in the shorter term, but at least gives you the flexibility over time to adjust your programme to meet contemporary defence needs. Time and time again we are saying, "Well, at this point, it was an appropriate defence need." Ten years or five years down the line it suddenly changes. You never have the flexibility.

Ursula Brennan: I agree that the defence programme is indeed not a flexible programme compared with programmes elsewhere. We do sometimes have the opportunity to do things differently. We are doing things differently with the JSF. Some of what we are trying to do with the Global Combat Ship, which is actually to make it more modular, is a way of dealing with those things. So, some of the things that we have done in more recent years have been about seeking to do that. One of the things, though, that I think this Committee sees time and time again is that we are talking here about an aircraft that was conceived in the 1980s. There is a sense in which we are always coping with two different histories going along together: things which started a very long time ago, where we say, "Faced with the challenges we face today, what is the best way of using this capability?"; and things where we are saying, "We haven't invested this money yet; what is the best way of doing it?" JSF and Typhoon are two really good examples of starting at a later date. We are doing it in a quite different way with JSF, but we cannot rewrite the history of Typhoon. What we are doing with Typhoon is making the most efficient and effective use out of it as an incredibly successful aircraft that we have but that we ordered a long time ago.

9 March 2011 Ministry of Defence

Q118 Ian Swales: On that link between the Typhoon and the JSF, we are saying that we will have about 160 planes in service for four or five years in the mid-teens. Some observers are saying that there might be question marks over the Typhoon's operational radius or its stealth capabilities, particularly against the JSF. Is it actually credible that as the JSF starts arriving, these 107 planes will still be in service in 2030, or are we going to find that we buy more and more and more of the JSF and quietly retire these planes much earlier, and therefore it is even less value for money than we perhaps fear? In other words, I am talking about the capability going forward, because we are talking long time scales here. We are talking about a plane that had a genesis in the 1980s and it running to 2030. That is nearly 50 years, which for a technological product is unheard of in most other fields.

Stephen Hillier: The answer is that Typhoon is a fourth-generation aircraft, and JSF is a fifth-generation aircraft. There are certain characteristics of JSF that Typhoon cannot have because of the design, such as stealth, so you are absolutely right in that respect. As JSF comes along, it will be a balance between both of those platforms. The JSF is very well fitted to a high-end, stealthy, air-to-surface mission. You will not always require that mission. There is also a numbers business as well, which is that as JSF comes along, we will need both fleets of Typhoon and JSF, which is our plan, to cover the range of commitments that we have. Now, you could say, "Well, why don't you go to a complete JSF fleet?", but that wouldn't be getting value for money out of the very significant investment we have made in the Typhoon force. So right through to 2030, there will be a requirement for Typhoon—a multi-role, agile, highly capable aircraft—across a range of scenarios. There will be a certain set of scenarios, which are relatively limited, that Typhoon will not be able to do, and JSF will be part of that.

Q119 Ian Swales: So how many JSF planes do you expect to have in 2030?

Stephen Hillier: I think we had that discussion earlier on.

Ursula Brennan: We don't need to decide that now.

Q120 Chair: They have, but they are not going to share it with us, Ian.

Ursula Brennan: To be fair, 2030 is a long way off. We don't have to decide that now.

Q121 Chair: But I have to tell you, your colleague said he has a figure in mind.

Ursula Brennan: Not for 2030.

Q122 Ian Swales: My question is what the overall capability is. As well as everything else, we have obviously got to plan how much money we are spending in total on aircraft over this period. I just have this sense that we are going to find that JSF becomes the latest thing and we will find that the Typhoons quietly—

Stephen Hillier: Obviously, I cannot foresee what the threats are going to be in 10 years' time and what the operating environment is going to be. That is why we

need to be flexible with how we do our planning. As I say, I think it would be wrong to set out right now: "Here is what we think is going to be right through to 2030." But from what we can see at the moment, there is a requirement for both platforms operating in a complementary way and in sufficient numbers to cover the range of tasks that we need to do. We don't need JSF to do every task. An example would be the protection of UK airspace and Falkland Islands airspace. Typhoon will remain immensely capable in that role right through to its out-of-service date.

Q123 Stephen Barclay: The Report makes clear that the senior responsible owner does not attend key meetings making strategic decisions, including those relating to exports and that budgetary and managerial responsibility is split between different parts of the Department. Could you just clarify why the SRO does not attend key meetings?

Ursula Brennan: The key meeting in question that I think you are talking about is the Typhoon Strategic Steering Group, which is the one that I chair. That very senior group is not a decision-making part of the Typhoon project and programme. It is a group that brings together people who are board members—people like the Chief of the Air Staff and the Chief of Defence Materiel. Because the Typhoon is such a capable aircraft and such an important part of our inventory, export issues raise a lot of issues that are not just to do with the airframe, but are actually to do with our international relationships with partners. It is those kinds of issues that get discussed. At that group, there are senior people who happen to be the line managers of the people who are actually the decision takers. In the classic way within government, we are briefed by the people who are the experts, but actually these are high-level discussions that are quite often about issues that are as much to do with international security as with technical aircraft issues.

Q124 Stephen Barclay: If we take the high-level discussions, does there need to be a culture change in the Department, in your view, on the issue of exports?

Ursula Brennan: I am not sure whether there needs to be a culture change. The new Government have made a very strong drive in relation to exports, and a lot of energy and effort is put into exports. There are exports for Defence equipment. It is not done by the Ministry of Defence, and export is not led by the Ministry of Defence; it is led by UKTI.

Q125 Stephen Barclay: Absolutely. I will come back to the SRO in a moment, because the project history, once again, has not been provided to the Committee. What I was picking up on was the evidence of Bernard Gray to this Committee. I asked him about the different view in his report to the evidence that General O'Donoghue had given. Mr Gray said: "I am sad to report that General O'Donoghue and I do not agree on all points", referring to exports. You were just referring to the top team, and the top team doesn't sound very united. I was just interested in your view as the Accounting Officer.

Ursula Brennan: Sorry, from memory, wasn't that conversation about whether we design in exportability

9 March 2011 Ministry of Defence

early on into the life of the projects, which is a completely different issue?

Stephen Barclay: It was in terms of the capability and the way exports are factored in, which obviously is very material in terms of the Typhoon.

Ursula Brennan: Yes, the discussion that was going on there was about whether within the Department, when we very first conceive of a requirement for something, we have thought enough about exportability at the start. We recognised that we didn't have that factored into our early consideration to a significant enough extent. As a result, sometimes the manufacturers are a long way down and we are a long way down using something, and it becomes apparent that there are serious export possibilities, and then there may be difficulties about sovereign capabilities that have been built into the equipment. As a result of that, we have changed the way that we do project start-up so that there is a thing we now call the "Genesis phase." When we are thinking about a new capability, one of the things we have to say is, "Do we think there is a likelihood for exports here? Is it something that we are going to buying from a British manufacturer where there is a scope for exports?" And if so, we ask, "Do we need to think about whether there is a standard version of this and a modular version, or is it something where that will not be relevant?" That was what Bernard Gray and Kevin O'Donoghue were disagreeing about.

Q126 Stephen Barclay: Okay, well, we can perhaps come back to that later. But in terms of the SRO, I was trying to understand the role of the SRO and the decisions that he took, and I submitted a parliamentary question for the project history for the Typhoon project. The Department has said that it won't be available for 10 weeks. This is a document that your own guidelines say that you have. The four previous ones I requested were all marked unclassified and didn't have a single redaction on them. I was just wondering why that project history is not available for us today.

Ursula Brennan: We do indeed have this document. It is a large and detailed technical document that has embedded within it a number of other documents that do have commercial issues in, which we have had to redact. It has simply been the time that it has taken to redact that information that has unfortunately delayed our ability to let you have it.

Q127 Stephen Barclay: So that one has been redacted. Well, that is interesting because the project history I requested for the last hearing took seven weeks to produce, and that included the Nimrod project history, which was a £4 billion project history, which I have here. The project history runs to two pages. The project guidelines by your Department actually run to eight pages. I am trying to understand is why that project history was not available for our last hearing—it took seven weeks to produce, although it has no redactions and is marked unclassified—and we are now finding that Typhoon is unavailable for today. Is that project history compliant with your Department's guidelines?

Simon Bollom: The problem is, as the PUS has mentioned, it is a very comprehensive document full of embedded—

Q128 Stephen Barclay: It is two pages.

Ursula Brennan: The Typhoon one is a much longer document.

Q129 Stephen Barclay: This is the £4 billion Nimrod project history, and you have eight pages of guidance as to what goes in it. I have got them here. This is your project history. It runs to eight pages and it lists all the things that should go in the document. It is, in essence, a high-level audit. You can call it a project log, or a project diary or a project history—whatever you like—and some of the things it shows are who the SRO is, when key decisions were taken and what the cost impact was. It was what I was trying to drive at earlier in terms of, "On the Typhoon, one would want to see what the decisions were and what impact they had in 2008–09 and in 2004." What I am saying is that the Nimrod—a £4 billion project—has a project history that runs to two pages, and that took seven weeks to produce. I am trying to understand why that took seven weeks when it is unclassified and not redacted, and why the Typhoon, which I requested several weeks ago, is not available today and will take 10 weeks to produce.

Ursula Brennan: Can we deal first with the Typhoon?

Simon Bollom: I am sure that we could provide you with a two-page project history.

Q130 Stephen Barclay: I don't want the two pages. This is a document your own guidelines say that you produce during the life of the project. I actually asked a further parliamentary question to say, "Was this Nimrod document produced during the life of the project?" I was quite surprised when I got the answer, "Yes," so it was obviously being produced intermittently during the life of the project.

Simon Bollom: Yes, you have asked for a copy of the project diary or the project history. That is a very comprehensive document, and we are redacting it in order to be able to present it to you.

Q131 Stephen Barclay: Are you saying then, Air Vice Marshal, that the Nimrod project history is compliant with your guidelines?

Simon Bollom: I don't deal with it any of it.

Q132 Stephen Barclay: Can I come on to a different question, then, because we touched on the senior responsible owners, and I also asked for the list of the SROs on the Typhoon and also projects such as Nimrod and one or two others? It took 12 weeks for that to be produced. It was produced on the last day before a recess, ensuring that it missed our last hearing and also the Report, even though, again, this is information that your own guidelines say that you have. Can you clarify why it took 12 weeks to produce that?

Ursula Brennan: The reason it took that time to produce is because, if I remember correctly, you asked us not just for current SROs, but for SROs going back.

9 March 2011 Ministry of Defence

Q133 Stephen Barclay: Yes, I did. There were two questions. You answered the first one on 25 November, in terms of current SROs in post, but you didn't answer the question in terms of those that had been in post previously.

Ursula Brennan: Yes, sorry. All I meant was you are absolutely right that for identifying current SROs, that information is not difficult to obtain. In order to go back and identify the SROs going back through history, it is necessary to go back to each of those individual projects and get that information. That will take some time.

Q134 Stephen Barclay: First, your own project history should have had those, but you say it wasn't difficult to find the current ones in post. It was a little surprising to hear that the dates you provided for those currently in post differed from the answers you submitted in the Library on 18 February. The actual dates differed from the answers you gave me on 25 November; and the dates further differed from the evidence that Vice Admiral Lambert gave this Committee at our last hearing. Even with that one, the dates you submitted in all three answers were different. Again, I am trying to understand why that was the case.

Ursula Brennan: Do you mean the dates that people were in post?

Q135 Stephen Barclay: The dates of the SROs. If we take Brigadier Jaques, who was the person I cited—this heroic figure covering £17.2 billion of spend over six projects—the date of his appointment varies in all the three different answers submitted. Vice Admiral Lambert said he had been in post for three years and was on his second term, which works back to 2007. In the answer you gave in November, you said he was appointed to all projects on 29 October 2009, and you gave a series of different dates in the answer you submitted in the House of Commons Library in February. I am just trying to understand what is going on.

Ursula Brennan: Quite why all those different dates were associated with Brigadier Jaques, I am not sure.

Stephen Hillier: I don't know for certain, although I can check, but we have been going through process reorganisation, and some of the projects and programmes that previously didn't have SROs were then appointed SROs. So although someone like Paul Jaques may have been in post in 2007, that doesn't necessarily mean that there was a project at that stage for him to be SRO for. We have been going through this evolutionary process. I just offer that as one of the possibilities.

Q136 Stephen Barclay: Sure, but it took 12 weeks to produce an incorrect answer, or an answer that was different from others. You didn't provide the project histories for seven weeks, and we come to the hearing today, where one wants to look at key decisions taken throughout the life of the project, and once again the project history is unavailable. It just doesn't smack of a very transparent and open process.

Ursula Brennan: I apologise for the time it is taking us to produce the project history in relation to Typhoon. It is a comprehensive document.

Q137 Mr Bacon: How many pages is the full comprehensive project history—the one that you are redacting? How many pages is the comprehensive one that you need to redact?

Simon Bollom: I am told, in excess of 30.

Q138 Mr Bacon: Thirty pages. Quite frankly, somebody could go through that in a day or in a couple of hours—certainly in an afternoon or a whole day—and pull out anything that was commercially or militarily sensitive. Surely it is not that difficult.

Stephen Barclay: By way of comparison, the aircraft carrier one, which incidentally had no cost figure in the whole project history, which was quite interesting, runs to 20 pages.

Mr Bacon: I thought for a minute you were going to say 400 or 500 pages, which would be an understandable reason why it has taken so many weeks not to produce it. But it is just 30 pages.

Simon Bollom: As I said, it is taking out all the references, all the links and the embedded documents in there, and then it will be about 30 pages.

Q139 Mr Bacon: It is the delete button on the PC that you need to find.

Stephen Barclay: Which was not required for the other four.

Ursula Brennan: The issue about the embedded documents is that in this project history, what we have got is links to embedded documents, which are commercial documents, and also to documents that have secure information. What we have been seeking to do is to ensure that we don't just delete all of that, but make as much of it available to you as possible. However, that has required going through and identifying each of those areas.

Q140 Chair: Ms Brennan, can I just make an ask from this Committee, which I would like you to adhere to? We would like the note on that history to be a note that we can attach to our report, which means that we require it from you within a week of this hearing.

Ursula Brennan: I think that the Minister has written—

Simon Bollom: Indeed, I believe Mr Luff has responded.

Chair: But it is a bit late to get it after the hearing.

Stephen Barclay: The answer he gave this morning was simply to say it would be put in the Library before recess, which was where I got the 10 weeks from.

Q141 Chair: Stephen, let us just say we want it within a week so that we can consider it as part of the evidence as we come to our conclusions.

Ursula Brennan: If the Committee needs it within a week, I fear it will probably have lots of blank spaces on it.

9 March 2011 Ministry of Defence

Chair: It is 30 pages—honestly! All I am going to say is none of us can believe that. We read reports and get our brains around 30 pages in a couple of hours.

Q142 Mr Bacon: One point of clarification. The £13.1 billion—or, depending on which number you take, the £16.6 billion—of support funding was originally predicated on 232 Typhoon aircraft. Is that right?

Simon Bollom: Yes, it was.

Q143 Mr Bacon: It was. So presumably one of the reasons why you are confident you can live within that number, and perhaps live within the lower original £13.1 billion number, is because you are now going to be servicing a considerably smaller number of aircraft—160 as the maximum for quite a short period, and then down to 107. Is that the reason why you are fairly confident you can live within that support number?

Simon Bollom: No, I can tell you that the £16.6 billion estimate is what we think it would have cost us if we had not taken the measures that I have already explained. So, believe me, these are measures that are real and that are commercial, in contracts, that will have to get us within that £13.1 billion.

Q144 Mr Bacon: Right, but the original £13.1 billion, when it was first estimated, was to cover 232 aircraft, and it is now going fairly quickly to be covering 107 aircraft by 2018. That is right, isn't it?

Simon Bollom: Yes.

Ursula Brennan: It is true, but one of the things that is quite difficult is that when you look at the support costs, there are no doubt washers and things of a quite low level where the volume of aircraft is important.

Q145 Mr Bacon: Quite a few of them are fixed costs.

Ursula Brennan: But there will be things to do with the avionics and so on where actually the change in the nature of the aircraft from Tranche 1 to Tranche 3, in terms of the difference in the capability and the difference in the software and all that kind of stuff, is really very significant. So it wouldn't simply be the case that if you went to the 232 aircraft and the 160, they would be the same. If you take 160 aircraft with a much higher-end capability versus the 232 at a stage when we hadn't designed in all that complexity, it is not comparing apples with apples, but I take your point.

Q146 Mr Bacon: No, of course not. I appreciate that, but none the less the total headroom you allowed yourselves was £13.1 billion, and now it is going to have to cover fewer aircraft, albeit with more advanced avionics and everything else. That is correct, isn't it?

Ursula Brennan: Yes

Q147 Mr Bacon: Two very quick questions, one of which is about SROs. Do you keep a list of SROs, centrally?

Ursula Brennan: We do, yes.

Q148 Mr Bacon: Do you keep the dates that they start and are appointed and the dates that they finish?

Ursula Brennan: I don't know whether we keep the—

Q149 Mr Bacon: Because it would be quite easy, the Treasury does it for accounting officers. They can tell us when accounting officers in your Ministry have been appointed and when they have left their job and have been replaced.

Ursula Brennan: We keep an account of their training, for example. Whether somebody literally keeps a list of their start and finish dates, I am not sure.

Q150 Mr Bacon: That is what interests me. It is so simple. As I say, the Treasury will do it. Just knowing who they are, when they started and when they finished seems frankly to be beyond the Ministry of Defence at the moment, and it ought not to be. It could be kept on one spreadsheet, and if you are not doing that yet, may I encourage you to think about doing that? That was a nod, was it?

Ursula Brennan: It was.

Q151 Mr Bacon: Excellent, excellent. We are into nods in this Committee.

Finally, you will recall that your predecessor, Sir Bill Jeffrey, told this Committee when we had a hearing on strategic financial management, that he had made a conscious decision to keep your Finance Director, Jon Thompson, aside from the role of strategic financial management. Well, you are frowning, but you can read the evidence. It was very, very clear—it was explicit. It was absolutely explicit that the Finance Director was not having the role over strategic financial management as it should have been in managing public money, and indeed, Jon Thompson gave evidence to us that he would expect it to move towards that position. Is that what is now happening?

Ursula Brennan: Absolutely, from 1 April, but the only thing I caveat is that it is not strategic financial management, which has always been Jon Thompson's responsibility. We might have a debate about that. It was planning. There was a distinction between strategy and planning and finance. Jon Thompson is responsible for the planning round as from the start of the new financial year in a few weeks' time, and the staff have been notified that that change is happening.

Chair: Okay, thanks very much indeed. I am going to draw this session to a close, and thank you very much for giving us your evidence.

Written evidence from the Ministry of Defence

MAJOR PROJECTS REPORT 2010: SENIOR RESPONSIBLE OWNERS IN THE MINISTRY OF DEFENCE

Please find attached a table setting out the chronology of those who have fulfilled the role of Senior Responsible Owner (SRO) for relevant programmes associated with each of the 30 projects listed in the Major Project Reports. I am sorry not to have provided this reply sooner but the information is not held centrally and it has taken some time for it to be collated and validated.

I should explain some background to the information in the table. In common with other government departments, the Ministry of Defence has had SROs for major business change programmes for some years. These SROs have existed alongside individuals with similar responsibilities in relation to the delivery of military equipment projects. In April 2004 we formalised these latter responsibilities under the designation “Single Point of Accountability” (SPA), with clear responsibility for co-ordinating delivery of the equipment with all related lines of development across the Department (eg training, infrastructure etc). Under that construct, the Directors of Equipment Capability, as SPAs, became regarded as fulfilling a role akin to that of the SRO.

As a consequence of the Defence Acquisition Change Programme and the ongoing roll out of Through Life Capability Management, the Department is developing a more rigorous programmatic approach to our business. We have progressively brigaded related equipment projects and management of the other lines of development into Capability Delivery programmes. We have also developed the SRO Policy to maintain alignment with the evolving principles in the Government effective practice guidance. In cases of substantial business change, significant complexity or demanding integration across boundaries, the Department appoints a designated SRO, with direct accountability to the Defence Board: examples include Carrier Strike and the Defence Training Systems and Infrastructure Change Programme. Where Military Capability programmes do not warrant a SRO designated by PUS, the Deputy Chief of the Defence Staff (Capability) appoints, as SRO, a Head of Capability (title changed from Director of Equipment Capability in 2009) as chair of the Programme Board to oversee all aspects of programme delivery, including the related equipment projects being delivered in the Defence Equipment and Support organisation. These SROs are accountable to the Joint Capabilities Board as the Sponsoring Group for ensuring that the objectives and benefits of the programmes are met. The SROs derive their authority from a Programme Mandate issued by the appointing authority and DCDS (Capability) issued his first ones in October 2009. This new approach is already delivering benefit to Defence, as was recognised by the NAO in the 2009 Major Project Report and is continuing to evolve as we learn lessons from implementation.

The committee appeared to be concerned about the continuity of appointments undertaking the SRO role. To this end, the attached table provides evidence that each project in the MPR has been overseen continuously by an SRO or SPA since the extension of SRO policy in April 2004.

I am copying this to the Comptroller and Auditor General and the Treasury Officer of Accounts.

6 February 2011

CHRONOLOGY OF SENIOR RESPONSIBLE OWNERS/SINGLE POINTS OF ACCOUNTABILITY FOR MPR PROJECTS

1. UK MILITARY FLYING TRAINING SYSTEM—BUSINESS CHANGE PROGRAMME

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Marshal Andrew Pulford	Deputy C-in-C Personnel and Air Member Personnel	Nov-10	To date	PUS appointed SRO
Air Chief Marshal Simon Byrant	Deputy C-in-C Personnel and Air Member Personnel	Sep-09	Nov-10	PUS appointed SRO.
Air Marshal Stephen Dalton	Deputy C-in-C Personnel and Air Member Personnel	Jul-08	Sep-09	PUS appointed SRO
Vice Admiral Trevor Soar	Capability Manager (Precision Attack) and on promotion to Chief of Materiel (Fleet)	Aug-04	Jul-08	UKMFTS was established as a MOD Business Change Programme during August 2004.

2. JOINT COMBAT AIRCRAFT

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Mark Roberts	Head of Capability, Deep Target Attack	Dec-10	To date	Role fulfilled as Chair of Combat Air Programme Board.
Air Commodore Phil Osborn	Head of Capability, Deep Target Attack	Jun-08	Dec-10	Role fulfilled as Single Point of Accountability for projects within the Deep Target Attack capability area and then as Chair of Combat Air Programme Board (from Oct 09).
Brigadier Peter Fox	Director Equipment Capability (Deep Target Attack)	Aug-05	Jun-08	Role fulfilled as Single Point of Accountability for projects within the Deep Target Attack capability area.
Air Commodore Tim Anderson	Director Equipment Capability (Deep Target Attack)	Apr-04	Aug-05	Role fulfilled as Single Point of Accountability for projects within the Deep Target Attack capability area.

3. TYPHOON

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Mark Roberts	Head of Capability, Deep Target Attack	Dec-10	To date	Role fulfilled as Chair of Combat Air Programme Board.
Air Commodore Phil Osborn	Head of Capability, Deep Target Attack	Oct-09	Dec-10	Role fulfilled as Chair of Combat Air Programme Board.
Air Commodore Sean Bell	Head of Capability, Theatre Airspace	Aug-08	Oct-09	Role transferred to Air Commodore Phil Osborn on appointment as Chair of Combat Air Programme Board.
Air Commodore Steve Hillier	Director Equipment Capability (Theatre Airspace)	Apr-05	Aug-08	Role fulfilled as Single Point of Accountability for projects within the Theatre Airspace capability area.
Air Commodore Brian Newby	Director Equipment Capability (Theatre Airspace)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the Theatre Airspace capability area.

4. TORNADO CAPABILITY DEVELOPMENT

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Mark Roberts	Head of Capability, Deep Target Attack	Dec-10	To date	Role fulfilled as Chair of Combat Air Programme Board.
Air Commodore Phil Osborn	Head of Capability, Deep Target Attack	Jun-08	Dec-10	Role fulfilled first as Single Point of Accountability for projects within the Deep Target Attack capability area and then on appointment as Chair of Combat Air Programme Board (Oct 09).
Brigadier Peter Fox	Director of Equipment Capability (Deep Target Attack)	Dec-07	Jun-08	Role fulfilled as Single Point of Accountability for projects within the Deep Target Attack capability area. Start date given is date of CU(P) Contract signature—Brig Fox took up appointment prior to this.

5. BEYOND VISUAL RANGE AIR-AIR MISSILE (METEOR)

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Mark Roberts	Head of Capability, Deep Target Attack	Dec-10	To date	Role fulfilled as Chair of Complex Weapons Programme Board.
Air Commodore Phil Osborn	Head of Capability, Deep Target Attack	Oct-09	Dec-10	Role fulfilled as Chair of Complex Weapons Programme Board.
Air Commodore Sean Bell	Head of Capability, Theatre Airspace	Aug-08	Oct-09	Role transferred to Air Commodore Phil Osborn on appointment as Chair of Complex Weapons Programme Board.
Air Commodore Steve Hillier	Director Equipment Capability (Theatre Airspace)	Apr-05	Aug-08	Role fulfilled as Single Point of Accountability for projects within the Theatre Airspace capability area.
Air Commodore Brian Newby	Director Equipment Capability (Theatre Airspace)	Apr 04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the Theatre Airspace capability area.

6. INDIRECT FIRE PRECISION ATTACK

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Mark Roberts	Head of Capability, Deep Target Attack	Dec-10	To date	Role fulfilled as Chair of Complex Weapons Programme Board.
Air Commodore Phil Osborn	Head of Capability, Deep Target Attack	Jun-08	Dec-10	Role fulfilled as Single Point of Accountability for projects within the Deep Target Attack capability area and then as Chair of Complex Weapons Programme Board (from Oct 09).
Brigadier Peter Fox	Director Equipment Capability (Deep Target Attack)	Aug-05	Jun-08	Role fulfilled as Single Point of Accountability for projects within the Deep Target Attack capability area.
Air Commodore Tim Anderson	Director Equipment Capability (Deep Target Attack)	Apr-04	Aug-05	Role fulfilled as Single Point of Accountability for projects within the Deep Target Attack capability area.

7. TYPE 45

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Commodore Simon Kings	Head of Capability, Above Water	Apr-10	To date	Role fulfilled as Chair of Maritime Platforms Programme Board.
Commodore Steve Brunton	Head of Capability, Above Water	Jun-07	Apr-10	Role fulfilled first as Single Point of Accountability for projects in the Above Water capability area then as Chair of Maritime Platforms Programme Board (Oct 09).
Commodore Luke van Beek	Director Equipment Capability (Above Water Effects)	Apr-04	Jun-07	Role fulfilled as Single Point of Accountability for projects within the Above Water capability area.

8. QUEEN ELIZABETH CLASS AIRCRAFT CARRIER

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Commodore Simon Kings	Head of Capability, Above Water	Apr-10	To date	Role fulfilled as Chair of Maritime Platforms Programme Board.
Commodore Steve Brunton	Head of Capability, Above Water	Jun-07	Apr-10	Role fulfilled first as Single Point of Accountability for projects in the Above Water capability area then as Chair of Maritime Platforms Programme Board (Oct 09).
Commodore Luke van Beek	Director Equipment Capability (Above Water Effects)	Apr-04	Jun-07	Role fulfilled as Single Point of Accountability for projects within the Above Water capability area.

9. ASTUTE CLASS SUBMARINE

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Commodore Mark Beverstock	Head of Capability, Deterrent and Underwater	Jan-11	To date	Role fulfilled as Chair of Underwater Platforms Programme Board.
Air Commodore Jerry Kessell	Temporary Head of Capability, Underwater	Jun-10	Jan-11	Role fulfilled as Chair of Underwater Platforms Programme Board.
Dr Paul Hollinshead	Head of Capability, Deterrent and Underwater	Oct-08	Jun-10	Role fulfilled as SPA and then as Chair of Underwater Platforms Programme Board (Oct 09).
Commodore John Gower	Director Equipment Capability (Underwater Effect)	Aug-06	Oct-08	Role fulfilled as Single Point of Accountability for projects within the UE capability area.
Commodore Mark Anderson	Director Equipment Capability (Underwater Effect)	Apr-04	Aug-06	Role fulfilled as Single Point of Accountability for projects within the UE capability area.

10. NIMROD MARITIME RECONNAISSANCE AIRCRAFT 4

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Commodore Mark Beverstock	Head of Capability, Deterrent and Underwater	Jan-11	To date	Role fulfilled as Chair of Anti-Submarine Warfare Programme Board.
Air Commodore Jerry Kessell	Temporary Head of Capability, Underwater	Jun-10	Jan-11	Role fulfilled as Chair of Anti-Submarine Warfare Programme Board.
Dr Paul Hollinshead	Head of Capability, Deterrent and Underwater	Oct-08	Jun-10	Role fulfilled as SPA and then as Chair of Anti-Submarine Warfare Programme Board (Oct 09).
Commodore John Gower	Director Equipment Capability (Underwater Effect)	Aug-06	Oct-08	Role fulfilled as Single Point of Accountability for projects within the UE capability area.
Commodore Mark Anderson	Director Equipment Capability (Underwater Effect)	Apr-04	Aug-06	Role fulfilled as Single Point of Accountability for projects within the UE capability area.

11. MERLIN CAPABILITY SUSTAINMENT PROGRAMME

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Cdre Mark Beverstock	Head of Capability, Underwater	Jan-11	To date	Role fulfilled as Chair of Anti-Submarine Warfare Programme Board.
Air Commodore Jerry Kessell	Temporary Head of Capability, Underwater	Jun-10	Jan-11	Role fulfilled as Chair of Anti-Submarine Warfare Programme Board.
Dr Paul Hollinshead	Head of Capability, Underwater	Oct-09	Jun-10	Role fulfilled as Chair of Anti-Submarine Warfare Programme Board.
Major General Chris Wilson	Capability Manager, Battlespace Manoeuvre	Dec-06	Oct-09	Role fulfilled as Senior Responsible Owner for Future Rotorcraft Capability (aka Rotary Wing/Helicopter) programme.
Major General Richard Applegate	Capability Manager (Battlespace Manoeuvre)	Apr-04	Dec-06	Role fulfilled as Senior Responsible Owner for Future Rotorcraft Capability (aka Rotorcraft/Helicopters) programme.

12. LYNX WILDCAT

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Commodore Russ Harding	Head of Capability, Air and Littoral Manoeuvre	Oct-09	To date	Role fulfilled as Chair of Rotary Wing Programme Board.
Major General Chris Wilson	Capability Manager (Battlespace Manoeuvre)	Dec-06	Oct-09	Role fulfilled as Senior Responsible Owner for Future Rotorcraft Capability (aka Rotary Wing/Helicopter) programme.
Major General Richard Applegate	Capability Manager (Battlespace Manoeuvre)	Apr-04	Dec-06	Role fulfilled as Senior Responsible Owner for Future Rotorcraft Capability (aka Rotorcraft/Helicopters) programme.

13. SEARCH AND RESCUE (HELICOPTER)

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Commodore Russ Harding	Head of Capability, Air and Littoral Manoeuvre	Oct-09	To date	Role fulfilled as Chair of Rotary Wing Programme Board.
Major General Chris Wilson	Capability Manager (Battlespace Manoeuvre)	Dec-06	Oct-09	Role fulfilled as Senior Responsible Owner for Future Rotorcraft Capability (aka Rotary Wing/Helicopter) programme.
Major General Richard Applegate	Capability Manager (Battlespace Manoeuvre)	Apr-04	Dec-06	Role fulfilled as Senior Responsible Owner for Future Rotorcraft Capability (aka Rotorcraft/Helicopters) programme.

14. A400M TRANSPORT AIRCRAFT

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Paul Jaques	Head of Capability, Expeditionary Logistics and Support (ELS)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the ELS area and then as Chair of Strategic Mobility Air Programme Board (from Oct 09).
Brigadier Hamish McNinch	Director Equipment Capability (ELS)	May-05	Mar-08	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.
Brigadier Charlie Hobson	Director Equipment Capability (ELS)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.

15. FUTURE STRATEGIC TANKER AIRCRAFT

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Paul Jaques	Head of Capability, Expeditionary Logistics and Support (ELS)	Jul-09	To date	Role fulfilled as Single Point of Accountability for projects within the ELS area and then as Chair of Strategic Mobility Air Programme Board (from Oct 09).
Air Vice Marshal Carl Dixon	Capability Manager (Information Superiority)	Jul-08	Jul-09	PUS appointed SRO.
Air Vice Marshal Stuart Butler	Capability Manager (Information Superiority)	May-07	Jul-08	PUS appointed SRO.
Brigadier Hamish McNinch	Director Equipment Capability (ELS)	May-05	May-07	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.
Brigadier Charlie Hobson	Director Equipment Capability (ELS)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.

16. MARITIME AFLOAT REACH AND SUSTAINABILITY

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Paul Jaques	Head of Capability, Expeditionary Logistics and Support (ELS)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the ELS area and then as Chair of Theatre Maritime Sustainment Programme Board (from Oct 09).
Brigadier Hamish McNinch	Director Equipment Capability (ELS)	May-05	Mar-08	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.
Brigadier Charlie Hobson	Director Equipment Capability (ELS)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.

17. OPERATIONAL UTILITY VEHICLE SYSTEM

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Paul Jaques	Head of Capability, Expeditionary Logistics and Support (ELS)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the ELS area and then as Chair of Logistics and Support Vehicle Programme Board (from Oct 09).
Brigadier Hamish McNinch	Director Equipment Capability (ELS)	May-05	Mar-08	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.
Brigadier Charlie Hobson	Director Equipment Capability (ELS)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.

18. C VEHICLE PFI

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Paul Jaques	Head of Capability, Expeditionary Logistics and Support (ELS)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the ELS area and then as Chair of Logistics and Support Vehicle Programme Board (from Oct 09).
Brigadier Hamish McNinch	Director Equipment Capability (ELS)	May-05	Mar-08	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.
Brigadier Charlie Hobson	Director Equipment Capability (ELS)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.

19. SUPPORT VEHICLES

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Paul Jaques	Head of Capability, Expeditionary Logistics and Support (ELS)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the ELS area and then as Chair of Logistics and Support Vehicle Programme Board (from Oct 09).
Brigadier Hamish McNinch	Director Equipment Capability (ELS)	May-05	Mar-08	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.
Brigadier Charlie Hobson	Director Equipment Capability (ELS)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ELS capability area.

20. WATCHKEEPER

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Tom Cross	Head of Capability, ISTAR	Jul-09	To date	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area and then as Chair of Air ISTAR Programme Board (from Oct 09).
Air Commodore Nick Gordon	Head of Capability, ISTAR	Sep-06	Jul-09	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Stuart Butler	Director Equipment Capability (ISTAR)	Apr-05	Sep-06	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Ron Cook	Director Equipment Capability (ISTAR)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.

21. HELIX (Now AIRSEEKER)

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Tom Cross	Head of Capability, ISTAR	Jul-09	To date	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area and then as Chair of Air ISTAR Programme Board (from Oct 09).
Air Commodore Nick Gordon	Head of Capability, ISTAR	Sep-06	Jul-09	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Stuart Butler	Director Equipment Capability (ISTAR)	Apr-05	Sep-06	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Ron Cook	Director Equipment Capability (ISTAR)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.

22. SUSTAIN SENTRY

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Tom Cross	Head of Capability, ISTAR	Jul-09	To date	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area and then as Chair of Air ISTAR Programme Board (from Oct 09).
Air Commodore Nick Gordon	Head of Capability, ISTAR	Sep-06	Jul-09	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Stuart Butler	Director Equipment Capability (ISTAR)	Apr-05	Sep-06	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Ron Cook	Director Equipment Capability (ISTAR)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.

23. AIRBORNE STAND-OFF RADAR (NOW SENTINEL)

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Tom Cross	Head of Capability, Intelligence, Surveillance, Target Acquisition Reconnaissance (ISTAR)	Jul-09	To date	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area and then as Chair of Air ISTAR Programme Board (from Oct 09).
Air Commodore Nick Gordon	Director Equipment Capability (ISTAR)	Sep-06	Jul-09	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Stuart Butler	Director Equipment Capability (ISTAR)	Apr-05	Sep-06	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Ron Cook	Director Equipment Capability (ISTAR)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.

24. DABINETT

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Air Commodore Tom Cross	Head of Capability, Intelligence, Surveillance, Target Acquisition Reconnaissance (ISTAR)	Jul-09	To date	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area and then as Chair of Direct Process and Disseminate Programme Board (from Oct 09).
Air Commodore Nick Gordon	Director Equipment Capability (ISTAR)	Sep-06	Jul-09	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Stuart Butler	Director Equipment Capability (ISTAR)	Apr-05	Sep-06	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.
Air Commodore Ron Cook	Director Equipment Capability (ISTAR)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the ISTAR capability area.

25. FALCON

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Neil Couch	Head of Capability, Command Control and Information Infrastructure (CCII)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the CCII capability area and then as Chair of NETWORK Programme Board (from Oct 09).
Brigadier Simon Shadbolt	Director Equipment Capability (CCII)	Apr-05	Apr-08	Role fulfilled as Single Point of Accountability for projects within the CCII capability area.
Brigadier Richard Bounsall	Director Equipment Capability (CCII)	Apr-04	Apr-05	Role fulfilled as Single Point of Accountability for projects within the CCII capability area.

26. JOINT MILITARY AIR TRAFFIC SERVICES

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Neil Couch	Head of Capability, Command Control and Information Infrastructure (CCII)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the CCII capability area and then as Chair of Air Command and Control Programme Board (from Oct 09).
Brigadier Simon Shadbolt	Director Equipment Capability (CCII)	Apr-06	Apr-08	Role fulfilled as Single Point of Accountability for projects within the CCII capability area. Project incepted in Apr 06.

27. BOWMAN

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Neil Couch	Head of Capability, Command Control and Information Infrastructure (CCII)	Apr-08	To date	Role fulfilled as Single Point of Accountability for projects within the CCII capability area and then as Chair of Logistics and Personnel Command and Control Programme Board (from Oct 09).
Brigadier Simon Shadbolt	Director Equipment Capability (CCII)	Apr-05	Apr-08	Role fulfilled as Single Point of Accountability for projects within the CCII capability area.

28. FUTURE INTEGRATED SOLDIER TECHNOLOGY

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Mike Riddell-Webster	Head of Capability, Ground Manoeuvre	Nov-08	To date	Role fulfilled as Single Point of Accountability for projects within the GM area and then as Chair of Light and Soldier System Programme Board (from Oct 09).
Brigadier Chris Deverell	Director Equipment Capability (Ground Manoeuvre)	Apr-07	Nov-08	Role fulfilled as Single Point of Accountability for projects within the GM capability area.
Brigadier Bill Moore	Director Equipment Capability (Ground Manoeuvre)	Apr-04	Apr-07	Role fulfilled as Single Point of Accountability for projects within the GM capability area.

29. FUTURE RAPID EFFECTS SYSTEM

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Mike Riddell-Webster	Head of Capability, Ground Manoeuvre	Nov-08	To date	Role fulfilled as Single Point of Accountability for projects within the GM area and then as Chair of Heavy and Medium Forces Programme Board (from Oct 09).
Brigadier Chris Deverell	Director Equipment Capability (Ground Manoeuvre)	Apr-07	Nov-08	Role fulfilled as Single Point of Accountability for projects within the GM capability area.
Brigadier Bill Moore	Director Equipment Capability (Ground Manoeuvre)	Apr-04	Apr-07	Role fulfilled as Single Point of Accountability for projects within the GM capability area.

30. TROJAN & TITAN

<i>Name</i>	<i>Appointment</i>	<i>Date Started (1)</i>	<i>Date Finished</i>	<i>Comments</i>
Brigadier Mike Riddell-Webster	Head of Capability, Ground Manoeuvre	Nov-08	To date	Role fulfilled as Single Point of Accountability for projects within the GM area and then as Chair of Heavy and Medium Forces Programme Board (from Oct 09).
Brigadier Chris Deverell	Director Equipment Capability (Ground Manoeuvre)	Apr-07	Nov-08	Role fulfilled as Single Point of Accountability for projects within the GM capability area.
Brigadier Bill Moore	Director Equipment Capability (Ground Manoeuvre)	Apr-04	Apr-07	Role fulfilled as Single Point of Accountability for projects within the GM capability area.

Footnotes:

(1) Refers to date of SRO appointment letter, issue of programme mandate or appointment to post, as appropriate.

(2) Directors of Equipment Capability designations changed to Heads of Capability in April 2009.

Supplementary evidence from the Ministry of Defence

TYPHOON PAC HEARING

Q23 *Variations in Unit Cost of Typhoon (£73.2 million v £120 million)*

As was evident from the Hearing, different methodologies for calculating Unit Cost can produce significantly different results.

The Unit Cost of £73.2 million (an increase of 26%) given at the Hearing uses the methodology agreed by the NAO for the Major Project Report (MPR) process, where the NAO then validate the costs as part of that exercise. This methodology removes the Development costs and Cost of Capital Charges before dividing the Production phase costs by the aircraft off-take. Development costs are removed to reflect that they are sunk costs from a separate phase of the project. The calculation used by the NAO in the Value For Money study report does not follow the MPR methodology. The inclusion of Development costs in effect creates a supplementary increase in Unit Cost because it penalises rather than recognises the increased effectiveness of reduced, more capable, aircraft numbers. Whichever methodology is chosen, the key points are that NAO analysis (para 2.4 of the Value For Money report) confirms production costs as being similar to comparable types of aircraft, and that we are paying the right price.

Q99 *BAEs profit margin, and yellow book clarification regarding incentivisation of single source tenders*

We are not able to disclose the precise BAE profit margin awarded for Typhoon contracts on grounds of commercial confidentiality. However, we can confirm that the profit rates applied follow HM Treasury approved rules and practices, as specified in the Yellow Book. This includes the Government Profit Formula (GPF), which is used to determine the profit included in the price of non-competitive contracts. The rates vary depending on whether a contract is non-risk (ie cost plus), or risk priced. Our non-competitive contracts include conditions giving the parties rights to price fixing and post-costing investigations, as well as arrangements to refer contracts to the Independent Review Board for Government Contracts, for arbitration or possible contract price adjustment. The application of these rules ensures that we achieve value for money in non-competitive contracts.

Q125 *Stephen Barclay MP request for the Typhoon project history, which the Chair then requested be made available within 7 days*

The Typhoon project history, as requested during the Hearing on 9 March is now provided, and will also be placed in the House Library. As requested, and to meet the desired timescale, the referenced embedded documents have been removed. (See separate attachment.)

TYPHOON PROJECT HISTORY

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
1	01/12/1983	Partner Nation Agreements	UK, FR, GE, SP, IT Chief of Staff agree and issue an outline air staff target for a new combat aircraft to enter service with the respective air forces for all 5 nations in the mid 90s.		Typh-B3a1
2	01/07/1984	Programme	Initial feasibility study launched for new European combat aircraft.		Typh-B3a1
3	23/04/1985	Approval—CSA	Chief Scientific Adviser (CSA) seeks Ministerial approval for Production Definition phase.	CSA/312/85(17/14)	Typh-B3a1
4	07/05/1985	Approval Project Definition	OD agrees to PD phase for EFA and studies into alternatives, including UK national solution.		Typh B3a1
5	01/07/1985	Partner Nation Agreements	France withdraws from European combat aircraft partnership in favour of its own national solution—Rafale.		Typh-B3a1
6	01/08/1985	Programme	Commencement of project definition phase.		Typh-B3a1
7	19/09/1985	Meeting—BOD	1st full meeting of the EFA Steering Group.		Typh-B3a1
8	01/12/1985	Programme	European air staff requirement agreed.		Typh-B3a1
9	05/12/1985	Meeting—JSC	1st full meeting of the EFA Steering Committee.		Typh-B3a1
10	21/02/1986	Approval—Treasury	Treasury approval for EFA Production Definition.	B/533/1695/01J	Typh B3a1
11	28/04/1986	Meeting—BOD	8th BOD agrees to the extension of the PD phase until 30 Sep 86 in view of additional tasks placed on industry.		Typh-B3a1
12	12/05/1986	Approval—EPC	EPC approves (ex-committee) extension of PD phase to 30 Sep 86.	CSA/369/86(17/14)	Typh-B3a1
13	01/06/1986	Industry	Formation of Eurofighter Jagdflugzeug GmbH (EF GmbH), in Munich, as the primary weapons systems contractor.		Typh-B3a1
14	02/06/1986	Approval—Treasury	MOD again seeks Treasury approval for P120 evaluation.	AS/Air(PE)1/126	Typh-B3a1
15	07/06/1986	Programme	Finalisation of baseline build standard for weapon system		Typh-B3a1
16	09/06/1986	Approval -Treasury	Treasury approval for P120 evaluation.		Typh-B3a1
17	23/06/1986	Commercial—BAC	Contract with BAE for EFA PD studies, effective from 1 Sep 85 until 31 Jul 86, but later extended to 30 Sep 86.	A49/07	Typh-B3a1
18	26/06/1986	Commercial—Rolls Royce	Contract with RR for EFA Engine PD studies, effective from 1 Sep 85 until 31 Jul 86, but later extended to 30 Sep 86.	A48/A65	Typh-B3a1
19	08/08/1986	Operations	British Aerospace flew the experimental aircraft programme (EAP) advanced technology demonstrator prototype, ZF534, from Warton.		Typh-B3a1
20	01/09/1986	Programme	Completion of project definition stage.		Typh-B3a1
21	01/09/1986	Industry	Eurojet Turbo GmbH formed. Eurojet GmbH comprises following companies are Motoren-und-Union (MTU), Rolls-Royce, FiatAvio and Industria de Turbo Propulsores (ITP).		Typh-B3a1
22	01/10/1986	Programme—DRRR	Start of Definition Refinement and Risk Reduction (DRRR) Phase—effective until 31 Jul 87.		Typh-B3a1
23	17/10/1986	Approval—DRRR	CA writes to CSA requesting approval for Definition Refinement and Risk Reduction (DRRR) phase from 1 Oct 86.	CA 23/1/3	Typh-B3a1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
24	21/10/1986	Partner Nation Agreements -MOU 1	European Fighter Aircraft (EFA) General MOU 1 Signed. This MOU is concerned with the general principles which govern the conduct of the programme.		Typh-B3A1
25	18/11/1986	Partner Nation Agreements -MOU 2—Definition Phase	MOU 2—Definition Phase signed. This MOU covers the definition work necessary to enable partners to reach a decision on whether to proceed jointly with full development.		Typh-B3a1
26	27/11/1986	Approval—DRRR	EPC agreement (ex-committee) to Definition Refinement and Risk Reduction (DRRR) phase (retrospectively from 1 Oct 86).	CSA/847/86(17/14)	Typh-B3a1
27	27/11/1986	Approval—Treasury DRRR	MOD seeks Treasury approval for Definition Refinement and Risk Reduction (DRRR) funding.	AS/Air(PE)1/126	Typh-B3a1
28	15/12/1986	Approval—Ministerial DRRR	MOD seeks Ministerial approval for Definition Refinement and Risk Reduction (DRRR) phase.	CSA 881/86(17/14)	Typh-B3a1
29	18/12/1986	Approval -Treasury DRRR	Treasury approval for Definition Refinement and Risk Reduction (DRRR) phase expenditure.	DAS B/533/1369/O1	Typh-Ba31
30	11/06/1987	Exports—Greece	Maj-Gen Kolonis RAF, Greek NAD, signals EFA nations' NADS requesting observer status, in advance of possible request to join programme as full participant.		Typh-B3a1
31	30/07/1987	Approval—EPC DRRR	EPC approves (ex-committee) extension of DRRR phase to 31 Dec 87, with assumed start date for full development of 1 Jan 88.	CSA/310/87(17/14)	Typh-B3a1
32	06/11/1987	Approval—EPC	EPC endorses submission for full development of EFA.	EP16/87	Typh-B3a1
33	24/03/1988	Exports—Norway	Briefing on EFA to Norwegian Air Staff in Oslo.		Typh-B3a1
34	21/04/1988	Approval—OD	OD agrees to EFA full development. Cabinet informed.		Typh-B3a1
35	25/04/1988	Parliamentary—Full development announced	S of S announces UK decision to embark on full development, subject to satisfactory contractual negotiation.		Typh-B3a1
36	04/05/1988	Partner Nation Agreements -Germany	Germany announces approval to embark on EFA Development.		Typh-B3a1
37	16/05/1988	Partner Nation Agreements -MOU 3 Development	Development MOU 3 signed. This MOU covers the design, development and demonstration of a weapon system along with cost and risk assessments which will enable participants to reach a decision on whether to proceed jointly with a production phase.		Typh-B3a1
38	23/11/1988	Commercial—MDC	Signature of Main Development Contracts (MDC) for the weapon system and engine, marked commencement of the full-scale development phase.		Typh-B3a1
39	23/11/1988	Commercial—MDC	Main development contracts signed by GM NEFMA.		Typh-B3a1
40	25/11/1988	Commercial	First UK (retrospective) payment released to Eurofighter for development work undertaken prior to contract signature, covering the period Jan to Oct 88.		Typh-B3a1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
41	29/11/1988	Commercial	First UK (retrospective) payment released to Eurojet under main development contract, covering period Jan-Oct 88.		Typh-B3a1
42	13/03/1992	Commercial—DASS	Contract awarded to Euro-DASS for defensive aids sub-system.		Typh-B3a1
43	10/12/1992	Partner Nation Agreements	At Defence Ministers conference, aircraft relaunched as Eurofighter 2000, reflecting what was then planned as its service entry date, 3 yrs later than originally intended.		Typh-B3a1
44	10/12/1992	Partner Nation Agreements	Brussels Communique by partner nations Ministers of Defence announcing intention to slow down and reorientate the programme in line with newly defined military requirements.		Typh-B3a1
45	21/01/1994	Requirements	Revised European Staff Requirement-Development signed by the air staff chiefs of the 4 participating nations for development of the new European fighter aircraft.		Typh-B3a1
46	27/03/1994	Operations	First flight of DA1/98+29 from Manching.		Typh-B3a1
47	06/04/1994	Programme—first flight of second development aircraft	First flight of second development aircraft from Warton, BAE built DA2/ZH588.		Typh-B3a1
48	01/12/1994	Approval—ASTA	ASTA studies and competition for provisional supplier approved by EAC.	EA37/94	Typh-B3a1
49	01/12/1994	Programme—CSA report	Chief Scientist Adviser's report on the technical status of the Eurofighter programme concludes EF2000 design is well balanced and closely matched to the requirement and that the aircraft would be more effective in its primary air combat role.	Event date not specified, defaulted 1st of month	Typh-B3a1
50	06/12/1994	Exports—Norway	Germany signs Norway LOU in Bonn relating to release of information to the Norwegian MOD. Valid for 5 years.		Typh-B3a1
51	01/01/1995	Approval—Treasury	Treasury approved funding for the UK contribution to the development phase of the project.	Event date not specified, defaulted 1st of month	Typh-B3a1
52	18/01/1995	Exports—Norway	Italy signs Norway LOU in Rome.		Typh-B3a1
53	31/01/1995	Exports—Norway	SP and UK sign Norway LOU in Munich.		Typh-B3a1
54	07/02/1995	Exports—Norway	Norway signs Norway LOU in Oslo.		Typh-B3a1
55	04/06/1995	Operations	Alenia-built third development aircraft DA3/MM-X602, the first with EJ200 power plants, first flown in Turin/Caselle.		Typh-B3a1
56	06/07/1995	Partner Nation Agreements -MOU 4	MOU 4—Reorientation signed. This MOU addresses post cold-war requirements and modifies (reorients) the provisions set out in the Development MOU 3.		Typh-B3a1
57	18/09/1995	Staff	Nick Pearce takes over as Typhoon IPTL.		Typh-B3A1
58	18/10/1995	Partner Nation Agreements -MOU 5	MOU 5 signed. This MOU sets out the arrangements governing the integration of the NAMMA and NEFMA agencies to form NETMA.		Typh-B3a1
59	01/11/1995	Commercial—Radar	Proposed shift of responsibility for management of the radar sub-contract from DASA to Bae endorsed by nations.	Event date not specified, defaulted 1st of month	Typh-B3a1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
60	09/11/1995	Operations	Sqn Ldr Simon Dyde became first RAF pilot to fly the Eurofighter (DA2) from BAE Warton.		Typh-B3a1
61	27/11/1995	Commercial—MDC	Revised Main Development Contracts placed.		Typh-B3a1
62	01/01/1996	Staff	Typhoon IPT begins relocation from London to Abbey Wood.		Typh-B3A1
63	18/01/1996	Partner Nation Agreements	Min(DP) meets GE State Secretary for Armaments in London. Press release welcomes Germany's intention to increase commitment to 180 aircraft, thus resolving the question of work share question and providing a firm basis for future phases.		Typh-B3a1
64	01/02/1996	Approval—Eurofighter	Eurofighter submission to the EAC for permission to enter future phases, production Investment/Production and Support.	Event date not specified, defaulted 1st of month	Typh-B3a1
65	01/04/1996	Commercial—Radar	Shift of radar sub-contract responsibility from DASA to BAE complete.		Typh-Ba31
66	02/04/1996	Approval—ASTA	EAC submission to Min(DP). Incl. ASTA.		Typh-B3a1
67	08/05/1996	Approval—Treasury	Chief Secretary to the Treasury approves entry, in principle, to future phases of the Eurofighter programme.		Typh-B3a1
68	15/05/1996	Partner Nation Agreements	State Secretaries Summit in Berlin. Confirm their intention to complete national approvals for future phases by end 96. Confirmed that planning for future phases would proceed in line with the Nov 95 'hybrid' work share agreement.		Typh-B3a1
69	31/08/1996	Operations	First flight of CASA-built sixth development aircraft, second 2-seater DA6/XCE.16-01 at Getafe.		Typh-B3a1
70	02/09/1996	Partner Nation Agreements	UK became the first to declare a firm production commitment and funding for the aircraft.		Typh-B3a1
71	02/09/1996	Parliamentary	S of S announces the UK's decision, in principle, to proceed to the next phases of the Eurofighter programme.		Typh-B3a1
72	21/10/1996	Partner Nation Agreements	Spain announced commitment to production, and terms for start-up funding were agreed with industry at the same time.		Typh-B3a1
73	05/12/1996	Partner Nation Agreements	All 4 governments declared support for a production launch.		Typh-B3a1
74	05/12/1996	Partner Nation Agreements	State Secretaries meeting in London. The partner nations reaffirmed their intention to complete their national approvals process to allow entry to the future phases of the programme early in 1997.		Typh-B3a1
75	27/01/1997	Operations	First flight of seventh and final development aircraft, Alenia-built DA7/MM-X603, at Turin/Caselle.		Typh-B3a1
76	11/02/1997	Approval—EAC	Chairman of the EAC submission to Min(DP) for approval to place PT/Production and Support contracts for Eurofighter.		Typh-B3a1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
77	26/02/1997	Partner Nation Agreements	Germany informs the UK that they will be unable to complete their national approval process for future phases, PT/Production and Support by end March as expected. They expect to complete their approvals between Apr-Jun 97 and stress they remain committed. Min(DP) writes to the Treasury requesting approval to place the initial contracts for future phases, PT/Production and Support.		Typh-B3a1
78	13/03/1997	Approval—Min (DP)	Warton-built fourth development aircraft, DAA/ZH590, the first 2 seater and first with full avionics for radar development, weapon integration and sensor fusion trials, flown for the first time at Warton.		Typh-B3a1
79	14/03/1997	Operations			Typh-B3a1
80	26/11/1997	Partner Nation Agreements -GE	Germany's Bundestag passed its 1998 Defence budget, which included production investment funding for Eurofighter.		Typh-B3a1
81	01/12/1997	Partner Nation Agreements -MOU 7	MOU 7—Integrated Logistic Support (ILS) signed. Sets out ILS arrangements that will be implemented in conjunction with the Production MOU 6. A series of supplements to this MOU are envisaged to describe additional future ILS activities.		Typh-B3a1
82	09/12/1997	Partner Nation Agreements—IT	Italy became the final partner to grant funds for production launch.		Typh-B3a1
83	15/12/1997	Operations	First AIM-9L sidewinder firing, by DA7/MM-X603.		Typh-B3a1
84	22/12/1997	Partner Nation Agreements -MOU	With 4 nations having finally granted funding, the agreement was ratified with the signature of an intergovernmental Memorandum of Understanding at a Defence ministers conference in Bonn covering Production Investment & Production & Logistics Support.		Typh-B3a1
85	22/12/1997	Partner Nation Agreements -MOU 6	MOU 6—Production signed. This MOU sets out the production investment arrangements covering the manufacture of aircraft, along with off take numbers, work shares and ceiling costs.		Typh-B3a1
86	01/01/1998	Commercial—'umbrella contract'	Umbrella' contract agreed (defines inter-alia total aircraft delivery (620), overall max prices & supplements 1&2 which constitute Tranche 1 order) UK order 232, GE order 180, IT order 121, SP order 87.		Typh-B3a1
87	01/01/1998	Staff	Mr Alan Woolley takes over as D/EFA / EFA IPT Leader.		Typh-Sec2a
88	14/01/1998	Operations	DA2/ZH588 undertook the first aerial refuelling, over the Irish sea with RAF VC10 K.3 ZA149.		Typh-B3a1
89	30/01/1998	Commercial	Supplement 1 Production Investment, Product and Support contracts signed to cover tooling and other preparatory work for production for the 620 aircraft, plus 90 options, which were to be ordered by the 4 partner nations.		Typh-B3a1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
90	01/05/1998	Programme—first metal cut for production aircraft	First metal cut for the production aircraft at DASA's Augsburg plant.		Typh-B3a1
91	03/09/1998	Partner Nation Agreements	With the Eurofighter 2000 title no longer accurately reflecting the In-service date, the aircraft formally re-named Eurofighter Typhoon, although initially this was just intended for marketing outside Europe.		Typh-B3a1
92	18/09/1998	Commercial—Tranche 1	Supplement 2 contract signed, giving authorisation for first batch of 148 production aircraft on fixed-price terms, comprising 44 for German Air Force, 29 for Italian Air Force, 20 for Spanish Air Force and 55 for the RAF.		Typh-B3a1
93	18/05/1999	Operations	DA5 flies to 1000th sortie in the development programme which at the time had amassed 830 flight hours.		Typh-B3a1
94	04/11/1999	Exports—General	Eurofighter International, a dedicated export sales organisation was set up by the 4 partner nations to market the aircraft overseas.		Typh-B3a1
95	01/02/2000	Operations	The programme passed the 1000th flight test hour milestone during the 75th flight of DA4 from Warton.		Typh-B3a1
96	24/05/2000	Commercial—Support	Contract for Eurofighter ground support system signed.		Typh-B3a1
97	12/12/2000	Partner Nation Agreements -MOU 6 supplement 1 -Germany	Germany sign MOU 6 supplement 1 to rejoin the EURODASS Programme. (UK also sign on 12 Dec. Spain sign on 15 Feb and Italy on 3 Apr 01).		Typh-B3a1
98	22/12/2000	Programme—general	The RAF announced that the Typhoon Operational Evaluation Unit would be designated 17 Squadron, whilst the Operational Conversion Unit would be 29 Squadron.		Typh-B3a1
99	08/03/2001	Industry	Production version of EJ2000 certified.		Typh-B3a1
100	29/03/2001	Exports—Greece	Greece announced that it was deferring signature of its planned order for 60 Typhoons, with option on further 30 until after 2004 in order to fund various social programs and the Olympic Games in Athens.		Typh-B3a1
101	27/04/2001	ASTA	Contract signed for Aircrew Synthetic Training Aids programme (ASTA) including 18 full mission simulators and 9 cockpit trainers.		Typh-B3a1
102	28/09/2001	Partner Nation Agreements -MOU 7 supplement 2	MOU 7 Supplement 2 signed. The purpose of this MOU is to extend the period of MOU 7 and to ensure support for the operation and evolution of the weapon system during its life (Spain signed 1st October. Germany signed 13 Nov and Italy signed 23 Nov 01). Air Cdre Dil Williams takes over as Typhoon IPTL. UK renames Eurofighter Typhoon.		Typh-B3A1 Typh-B3A1
103	01/01/2002	Staff			Typh-B3A1
104	01/01/2002	Programme—general			Typh-B3A1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
105	09/04/2002	Operations	First guided AIM-120 AMRAAM firing against a Meteor Mirach 100 turbojet-powered drone target, undertaken by DA4/ZH590 on QinetiQs Benecula range.		Typh-B3a1
106	14/04/2002	Operations	First flight from Warton of 2 seat BAE Systems-built instrumented production aircraft, IPA/ZJ699, the first production Typhoon although not the first to fly.		Typh-B3a1
107	02/07/2002	Exports—Austria	Austrian Government announced selection of the Typhoon as the Austrian Air Force's new fighter, with the requirement for 24 aircraft. This was subsequently reduced to 18 when contracts were finally signed in Jul 03.		Typh-B3a1
108	23/07/2002	Programme—general	The Typhoon formally adopted the name Typhoon for the aircraft. It was also announced that the air forces of the other partner nations—Germany, Italy and Spain—had agreed to adopt Typhoon as the official service name.		Typh-B3a1
109	21/11/2002	Operations	The programme suffered its first aircraft loss when DA6/XCE.16–01 flamed out under an unexpected power surge during engine reflight trials forcing 2 crew to eject. DA6 has completed 362 test flights in 325 flight hours.		Typh-B3a1
110	01/12/2002	Parliamentary	Written Ministerial statement issued announcing that the In-Service date would be delayed from end 2002 to Jun 03.		Typh-B3a1
111	28/01/2003	Exports—Norway	The Norwegian MOD signed an overarching industrial partnership agreement with Eurofighter GmbH, under which Norwegian industry would participate in development of enhanced versions of the Eurofighter weapon system..		Typh-B3a1
112	13/02/2003	Operations	First series production aircraft, GT001/98+31 (to be re-serialled 30+01 in service), a 2-seater for the German Air Force, completed its first flight to Manching.		Typh-B3A1
113	18/03/2003	Commercial	First Typhoon aircraft accepted off contract.		Typh-B3a1
114	28/03/2003	Industry	Eurofighter GmbH announced the formal opening of the joint industry-operator International Weapon System Support Centre (IWSSC) in Hallbergmoos, Germany.		Typh-B3A1
115	15/04/2003	ASTA	Eurofighter GmbH announced the formal inauguration of the Aircrew Synthetic Training Aids Joint Integration Facility (ASTA JIF) in Manching, Germany.		Typh-B3A1
116	11/05/2003	Staff	Rob Shiels takes over as Typhoon IPTL.		Typh-B3A1
117	30/06/2003	Commercial	International type acceptance formally granted for the Typhoon, paving the way for service entry with the air forces of the partner nations.		Typh-B3A1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
118	01/07/2003	Exports—Austria	Austria signed a contract for the purchase of 18 Eurofighter aircraft for the Austrian Air Force. The Austrian parliaments Upper House had approved funding for the acquisition on 11 Jun 03.		Typh-B3A1
119	22/08/2003	Exports—Austria	After gaining full parliamentary approval, the previously signed Austrian order for 18 Eurofighter Typhoons formally became effective.		Typh-B3A1
120	01/10/2003	Meteor	Commencement of integration of the Meteor beyond visual air-to-air missile onto the Typhoon was announced following 'fit and form' ground trials with IPAI at Warton. These trials were to check compatibility with the under fuselage missile eject launcher.		Typh-B3A1
121	10/10/2003	Export, Singapore	Singapore announce that the Typhoon has been down selected in the Next Fighter Replacement Programme competition along with the Rafale and the F-15.		Typh-B3A1
122	11/12/2003	Ministerial	SofS wrote to fellow PN ministers (MO 26/11/9K dated 11 Dec 03) outlining inter alia UK commitment to multi-role.		Typh-Sec2a
123	18/12/2003	Operations	BT004/ZJ 803 accepted into service (Block 1 twin seater)		Typh-Sec2a
124	19/12/2003	Commercial—Case White	Case White contract partnership between BAES and MOD commences.		Typh-B3a1
125	19/12/2003	Operations	BT003/ZJ 802 accepted into service (Block 1 twin seater)		Typh-Sec2a
126	03/03/2004	Operations	BT001/ZJ 800 accepted into service (Block 1 twin seater)		Typh-Sec2a
127	12/03/2004	Operations	BT006/ZJ 805 accepted into service (Block 1b twin seater)		Typh-Sec2a
128	06/04/2004	Operations	BT007/ZJ 806 accepted into service (Block 1b twin seater)		Typh-Sec2a
129	16/04/2004	Operations	BT008/ZJ 807 accepted into service (Block 1b twin seater)		Typh-Sec2a
130	01/05/2004	Programme	The RAF began operating the aircraft under the normal RAF safety regime.		Typh-B3A1
131	30/06/2004	Operations	BT009/ZJ 808 accepted into service (Block 1b twin seater)		Typh-Sec2a
132	29/07/2004	Operations	BT010/ZJ 809 accepted into service (Block 1b twin seater)		Typh-Sec2a
133	16/08/2004	Approval—Tranche 2	Ministers and IAB approve Tranche 2 review note. This endorses the customer requirement for a further 89 aircraft in Tranche 2 and authorises price negotiations.	D/IAB/3/2/1	Typh-B3a1
134	27/08/2004	Operations	BT011/ZJ 810 accepted into service (Block 1b twin seater)		Typh-Sec2a
135	29/10/2004	Operations	BT002/ZJ 801 accepted into service (Block 1 twin seater)		Typh-Sec2a
136	01/11/2004	Approval—Tranche 2	Typhoon Tranche 2 Main Gate Approval.		Typh-B3A1
137	24/11/2004	Operations	BT005/ZJ 804 accepted into service (Block 1b/2 twin seater)		Typh-Sec2a
138	13/12/2004	Programme—Batch 2	Batch 2 Type acceptance agreed. Clears the way for the more advanced Batch 2 aircraft, both twin and single seat, to be accepted into service with the RAF.	D/CSA/12/4/2 (107/05)	Typh-B3A1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
139	14/12/2004	Commercial—Tranche 2	Tranche 2 production contract signed £4.3Bn cost to UK. Cost to all nations £10.6Bn.		Typh-B3A1
140	15/12/2004	Parliamentary—Tranche 2	SofS makes announcement on Tranche 2 signature to Parliament.	Hansard	Typh-B3A1
141	28/01/2005	Support	Support Readiness Review held by DG Log (Strike) and COS Spt and agreed there will be sufficient support in place by 1 Jul 05 to start operations at RAF Coningsby.	20050302-RM-TyphoonReadiness-COSSpt and DGL(S)(ENS)/500013	Typh-B3A1
142	01/02/2005	Staff—NETMA	New NETMA GM—Peter Worrall takes up post—mandate for reform.		Typh-B3A1
143	07/02/2005	Operations	23 missile firings recorded.		Typh-B3A1
144	22/02/2005	Operations	1000th flying hour clocked up on RAF twin seater flight out of Warton.		Typh-B3A1
145	07/03/2005	Programme—Batch 2	ACAS signs off batch 2 release to service.		Typh-B3A1
146	21/03/2005	Partner Nation Agreements -MOU 7	ILS MOU 7 Supplement 3 signed by NAD's of all partner nations in Madrid. Ensures release of national funding to NETMA to pay for aircraft support and maintenance.		Typh-B3A1
147	24/03/2005	Operations	BT012/ZJ 811 accepted into service (Block 2 twin seater).		Typh-Sec2a
148	30/03/2005	Operations	First single seater, BS004/ZJ 913, accepted into service by RAF (Block 2).		Typh-B3A1
149	01/04/2005	Operations	First single-seat Typhoon sortie with an RAF pilot, flying under RAF Release To Service rules. Aircraft BS004 departed Warton and landed at RAF Coningsby.		Typh-B3A1
150	15/04/2005	Exports—Singapore	Singapore inform BAES that Typhoon is not on the final shortlist for their Next Fighter Replacement Programme (F15 and Rafale proceed). Singapore indicate that the proposed Typhoon delivery schedule and upgrade programme did not meet their requirements.	Ref 1 JANE'S DEFENCE WEEKLY—APRIL 27, 2005 Ref 2 DESO Mr Gray Ref 3 D/RDEast/Singapore/1/1 Ref 4 Evening Standard 27 Apr 05	Typh-B3A1
151	16/05/2005	Operations	First In-service ASRAAM launch. Against a target on a Typhoon sortie out of RAF Coningsby.		Typh-B3a1
152	19/05/2005	Programme—In service	No 17(R) Squadron officially re-formed at RAF Coningsby. The squadron acts as the operational evaluation unit for Typhoon.		Typh-B3a1
153	19/05/2005	Meeting—NADs	NADs directed BOD through NETMA to obtain costed proposals and timescales from industry, by 23 Jun 05, for upgrade options including precision air-to-ground capabilities.	Ref 1 CDP report to Min(DP) Ref 2 NAD's Agreement and Decision Sheet	Typh-Sec2a
154	30/05/2005	Future capability	NETMA issued final version of Future Enhancements Strategy Paper as agreed by all Nations, setting out the strategy for pursuing Future Enhancements.		Typh-Sec2a
155	03/06/2005	Operations	BS005/ZJ 914 accepted into service (Block 2 single seater).		Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
156	16/06/2005	Operations	BS003/ZJ 912 accepted into service (Block 2 single seater).		Typh-Sec2a
157	01/07/2005	Operations	Formal activation of Typhoon Wing at RAF Coningsby, following successful conclusion of Case White (where Typhoons were operated and maintained by BAES Warton).		Typh-Sec2a
158	11/08/2005	Operations	BT003 / ZJ 802, Block 1 aircraft, accepted off-contract following Retrofit 1 programme.		Typh-Sec2a
159	18/08/2005	Operations	BS002/ZJ 911 accepted into service (Block 2 single seater).		Typh-Sec2a
160	31/08/2005	ASTA	ASTA ISD achieved by handover of first Emulated Deployable Cockpit Trainer (EDCT) at RAF Coningsby.		Typh-Sec2a
161	01/09/2005	Systems	2 Typhoon F2 (Single Seat) of the Typhoon OEU deployed to Reno, Nevada to conduct hot and high trials. This represents first excursion from Europe of single seat Typhoon.		Typh-Sec2a
162	09/09/2005	Operations	BS006/ZJ 915 accepted into service (Block 2 single seater).		Typh-Sec2a
163	20/09/2005	Operations	BT013/ZJ 912 accepted into service (Block 2b twin seater).		Typh-Sec2a
164	03/10/2005	Programme & Business Management	IPT re-structured to focus on Support issues; addition of new Systems and Performance Management sections.		Typh-Sec2a
165	07/10/2005	Operations	BS007/ZJ 916 accepted into service (Block 2 single seater).		Typh-Sec2a
166	17/10/2005	Support	Min(DP) writes to EPCs raising concerns over spares situation that is hampering flying tasks at RAF Coningsby.		Typh-Sec2a
167	01/11/2005	Programme & Business Management	Introduction of Balanced Scorecard to monitor IPT's top level outputs (Performance, Cost, Time, Business and Health).		Typh-Sec2a
168	01/11/2005	Finance	Estimated Typhoon costs are classified in MPR05 to protect the UK's negotiating position in respect of further procurement.		Typh-Sec2a
169	01/11/2005	Programme & Business Management	First Balanced Scorecard "Health Barometer" issued to 30 staff. Provides a snapshot of how IPT feels. Good overall results, but more to do on motivation and communication.		Typh-Sec2a
170	04/11/2005	Support	CEO EF responds to Min(DP)'s letter on spares situation and describes action being taken to recover situation.		Typh-Sec2a
171	04/11/2005	Programme & Business Management	Revised CSA between IPT and HQ 1 Gp (Availability Manager) introducing revised output based metrics agreed and signed.		Typh-Sec2a
172	10/11/2005	Operations	BS011/ZJ 920 accepted into service (Block 2 single seater)		Typh-Sec2a
173	24/11/2005	Operations	BS008/ZJ 917 accepted into service (Block 2 single seater).		Typh-Sec2a
174	25/11/2005	Operations	2336 Flying Hours achieved.		Typh-Sec2a
175	30/11/2005	Operations	1 x AMRAAM AIM120B missile successfully fired from Typhoon during Trial WALDRON at Naval Weapons Range, Point Mugu, California.		Typh-Sec2a
176	01/12/2005	Future capability	CP193 (austere augmentation) and CP210 (future capability enhancement) proposals received.		Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
177	01/12/2005	Support	PSOP2 engine support contract with Rolls Royce, MDC Amendment and CP108 all signed. NETMA contracts for EJ PC11 Op Phase 2 and ISSS Phase 2 both signed.		Typh-Sec2a
178	01/12/2005	Programme & Business Management	Introduction of Customer Barometer (as part of Balanced Scorecard).		Typh-Sec2a
179	08/12/2005	Operations	BS012/ZJ 921 accepted into service (Block 2 single seater)		Typh-Sec2a
180	18/12/2005	Operations	BT014/ZJ 813 accepted into service (Block 2b twin seater)		Typh-Sec2a
181	21/12/2005	Exports—Saudi Arabia	Understanding Document signed by SofS between UK and Saudi Arabia for supply of 72 Typhoons to Saudi Arabia.		Typh-Sec2a
182	01/01/2006	NETMA	Re-structuring of NETMA, including a new Division responsible for overall Programme Management; also an additional support Division in recognition of Typhoon being in-service and moving to operational deployment.		Typh-Sec2a
183	12/01/2006	Future capability	Spain drops requirement for austere precision air-to-surface capability in Block 5 Tranche 1 and consequently will not pursue CP193.		Typh-Sec2a
184	16/01/2006	Operations	Failure of nose wheel engagement on landing of twin seat Typhoon BT11 at RAF Coningsby. Crew unhurt.		Typh-Sec2a
185	30/01/2006	Meteor	Meeting between CDP and EF GmbH/MBDA to discuss position on Typhoon/Meteor integration programme.		Typh-Sec2a
186	02/02/2006	Operations	BT001 / ZJ 800, Block 1 aircraft, accepted off-contract following Retrofit 1 programme.		Typh-Sec2a
187	03/02/2006	ASTA	2nd Emulated Deployable Cockpit Trainer (EDCT) accepted into service at RAF Coningsby.		Typh-Sec2a
188	17/02/2006	Operations	BS009/ZJ 918 accepted into service (Block 2 single seater)		Typh-Sec2a
189	17/02/2006	Operations	BS013/ZJ 922 accepted into service (Block 2 single seater)		Typh-Sec2a
190	20/02/2006	Support	First phase of the Direct Line Feed system for consumables spares commenced.		Typh-Sec2a
191	23/02/2006	Systems	T1 Retrofit Programme—R2 Retrofit Side Letter signed.		Typh-Sec2a
192	24/02/2006	Ministerial	Visit by Min(DP) to RAF Coningsby—Lord Drayson flew in a Typhoon and was appraised of RAF Coningsby's principal issues including spares.		Typh-Sec2a
193	08/03/2006	Ministerial	Ministerial Stocktake, led by Min(DP), to consider and agree an outline strategy for transforming and managing the programme within the funding and industrial constraints.		Typh-Sec2a
194	24/03/2006	Support	Contract for National Support Centre awarded by NETMA to Eurofighter GmbH, prime contractor BAES. Contract value £100M. Planning in-service date Nov 08.		Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
195	28/03/2006	Ministerial	Second Stocktake meeting.		Typh-Sec2a
196	31/03/2006	Operations	Formation of first Typhoon operational squadron, 3(F) Squadron, at RAF Coningsby.		Typh-Sec2a
197	31/03/2006	Ministerial	Min(DP) meeting with German State Secretary (Dr Eickenboom) to discuss FCP and industrial issues.		Typh-Sec2a
198	03/04/2006	Staff	DPA Executive Board overhaul, to include a 2* DG Typhoon post with dedicated responsibilities for Typhoon and BVRAAM (Meteor) IPTs. AVM Steve Dalton appointed: to take up post in May 06.	D/DCE/117/3 (054) dtd 3 Apr 06	Typh-Sec2a
199	03/04/2006	Operations	BS014/ZJ 923 accepted into service (Block 2 single seater)		
200	11/04/2006	Operations	BT007 / ZJ 806, Block 1b aircraft, accepted off-contract following Retrofit 1 programme.		Typh-Sec2a
201	18/04/2006	ASTA	Training of "ab initio" pilots commences following the entry into service of 2 networked Emulated Deployable Cockpit Trainers.		Typh-Sec2a
202	21/04/2006	Operations	BS015/ZJ924 entered into service (Block 2 single seater)—first aircraft for new operational squadron, 3(F) Squadron.		Typh-Sec2a
203	24/04/2006	Staff	Air Cdre Alex Deytrikh arrived in Typhoon IPT as IPT Leader (designate) to commence handover		Typh-Sec2a
204	04/05/2006	Operations	First release of 2 x 450kg (1,000 lb) GBU-16 laser-guided bombs (LGB) (Paveway II-class NATO-standard air-to-surface precision bomb). Tests conducted from Spanish Air Force Base by EADS CASA test pilots using instrumented production aircraft.		Typh-Sec2a
205	19/05/2006	Operations	3760 flying hours broken down as: 29(R) Sqn—2779; 17(R) Sqn—880; 3(F) Sqn—101 3421 sorties in total		Typh-Sec2a
206	19/05/2006	Operations	28th aircraft—BS010 / ZJ919 accepted into service (Block 2 single seater)		Typh-Sec2a
207	25/05/2006	Operations	Successful trial flight of Laser Designator Pod (LDP) on Cheyenne test aircraft. Demonstrated potential capability of a Typhoon in the Air-to-Surface role.		Typh-Sec2a
208	31/05/2006	Operations	29th aircraft—BS016 / ZJ925 accepted into service (Block 2 single seater)		Typh-Sec2a
209	01/06/2006	Staff	Air Cdre Alex Deytrikh assumed post of Typhoon IPT Leader.		Typh-Sec2a
210	01/06/2006	Reviews	DPA Project Rehabilitation Unit conducted initial scoping study to establish parameters for an in-depth review of Typhoon IPT. CDP gave agreement for the review to commence.		Typh-Sec2a
211	13/06/2006	Operations	BS 009 / ZJ 918—left hand engine flame-out and rundown during sortie. Engine could not be re-lit. Aircraft landed safely and industry investigation instigated.		Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
212	23/06/2006	Operations	30th aircraft—BS017 / ZJ926 accepted into service (Block 2 single seater)		Typh-Sec2a
213	23/06/2006	Operations	BT009 / ZJ 808, Block 1b aircraft, accepted off-contract following Retrofit 1 programme.		Typh-Sec2a
214	10/07/2006	Operations	31st aircraft—BS019 / ZJ 928 accepted off-contract (Block 2b single seater)		Typh-Sec2a
215	17/07/2006	Reform	NADs, CEOs of EF & EJ GmbHs and GM NETMA signed Protocols Document outlining industrial/programme reform areas being addressed by 4 nation Tiger Team, led by DG Typhoon for UK.		Typh-Sec2a
216	19/07/2006	Future capability	CP193 for Austere Air-to-Ground capability on RAF Typhoons endorsed by Partner Nations at 132 BOD in London (integration of a Laser Designator Pod and Enhanced Paveway II Laser Guided Bomb).		Typh-Sec2a
217	20/07/2006	Future capability	Contract signed by GM NETMA and CEO EF GmbH at Farnborough Air Show for Austere Air-to-Ground capability on RAF Typhoons (integration of a Laser Designator Pod and Enhanced Paveway II Laser Guided Bomb). Value £73M.		Typh-Sec2a
218	28/07/2006	Staff	Mr Rob Shiels, former Typhoon IPT Leader, left Typhoon IPT on retirement.		Typh-Sec2a
219	31/07/2006	Operations	32nd aircraft—BS018 / ZJ 927 accepted off-contract (Block 2b single seater)		Typh-Sec2a
220	01/08/2006	Systems	Endorsement of Retrofit Programme R2 Implementation Management Plan. Retrofit Programme R2 will start Oct 06 and upgrade Block 1, 1B, 1C, 2 & 2B Tranche 1 aircraft to B5EIS standard. Planned to take until mid 2012.		Typh-Sec2a
221	07/08/2006	Operations	4828 flying hours broken down as: 29(R) Sqn—3360; 17(R) Sqn—1114; 3(F) Sqn—354 4538 sorties in total		Typh-Sec2a
222	08/08/2006	Support	DPA & QinetiQ signed contract to continue support for Typhoon over next 3 years. Package includes defined technical support, advice and safety clearance activity, together with funds allocated to sub-contracts and future emergent work.		Typh-Sec2a
223	17/08/2006	Exports—Saudi Arabia	Crown Prince Sultan of the Kingdom of Saudi Arabia signed a Variation Document which moves forward the export order from UK to Saudi Arabia, including the supply of 72 Typhoon aircraft, and defines a programme for the route to contract signature.		Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
224	29/08/2006	Reviews	DPA Project Rehabilitation Unit commenced review of Typhoon IPT's acquisition programme and linkage with exports; enabling skills and IPT processes, especially in project management, financial and commercial areas. Review to be concluded by 20 Oct 06.		Typh-Sec2a
225	15/09/2006	Operations	33rd aircraft—BS020 / ZJ 929 accepted off-contract (Block 2b single seater).		Typh-Sec2a
226	22/09/2006	Operations	BT010 / ZJ 809, Block 1b aircraft, accepted off-contract following Retrofit 1 programme.		Typh-Sec2a
227	29/09/2006	Operations	34th aircraft—BS021 / ZJ 930 accepted off-contract (Block 2b single seater).		Typh-Sec2a
228	29/09/2006	Operations	35th aircraft—BS022 / ZJ 931 accepted off-contract (Block 2b single seater). BS 022 is the 100th production aircraft to be delivered into service with the 4 Partner Nations.		Typh-Sec2a
229	29/09/2006	Operations	The Eurofighter Partner Companies' test fleet completed 5000 flights. The test fleets, based in Getafe (SP), Manching (GE), Turin (IT) and Warton (UK), comprise 5 prototype Development / 5 Instrumented Production / 1 Instrumented Series Production a/c.		Typh-Sec2a
230	11/10/2006	Exports / Operations	"Austrian Diversion Agreement" signed by GM NETMA on 14 Jun 06 and CEO EF GmbH on 11 Oct 06. The Agreement diverts/defers 6 Tranche 1 aircraft from the 4 Partner Nations in support of the Austrian export order (includes 2 aircraft from RAF).		Typh-Sec2a
231	16/10/2006	Operations	UK R2 Retrofit Programme started on schedule on 16 Oct 06 with the input of aircraft BS021. R2 Programme brings aircraft to Block 5 standard which is essential to the build-up of the UK fleet to meet the Air-to-Air and Multi Role OEDs.		Typh-Sec2a
232	07/11/2006	Operations	DPA and BAES signed contract for Whole Aircraft Maintenance and Upgrade (WASMU) programme, which combines scheduled maintenance and the upgrade programme. Contract value £5.4M.		Typh-Sec2a
233	10/11/2006	Operations	36th aircraft—BS023 / ZJ 932 accepted off-contract (Block 2b single seater).		Typh-Sec2a
234	29/11/2006	ASTA	First Cockpit Trainer accepted at RAF Coningsby with initial software load (1.0).		Typh-Sec2a
235	30/11/2006	Operations	37th aircraft—BS024 / ZJ 933 accepted off-contract (Block 2b single seater)		Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
236	30/11/2006	ASTA	134 NEFMO BOD agrees to proceed with a Restructured Programme for ASTA Tranche 1. UK participation is subject to IAB Approval which is to be sought by July 2007.		Typh-Sec2a
237	14/12/2006	Operations	38th aircraft—BS025 / ZJ 934 accepted off-contract (Block 2b single seater)		Typh-Sec2a
238	14/12/2006	Operations	Retirement flight of DA4 from BAES Warton to RAF Coningsby.		Typh-Sec2a
239	19/12/2006	Exports / MOU	CDP signed the MOU for the Association of Austria with the Eurofighter programme. The MOU had already been signed by other NADs (for GE, IT, SP and Austria).		Typh-Sec2a
240	09/01/2007	Operations	BT 004 / ZJ 803, Block 1 aircraft, accepted off-contract following Retrofit 1 programme.		Typh-Sec2a
241	10/01/2007	Future capability	HM Treasury approval for Future Capability Programme (FCP) Phase 1 (CP210).		Typh-Sec2a
242	19/01/2007	Future capability	Main Gate approval note for Future Capability Programme (FCP) Phase 1 (CP210) issued by CSA, following IAB approval.		Typh-Sec2a
243	26/01/2007	Operations	39th aircraft—BS 026 / ZJ 935 accepted off-contract (Block 2b single seater)		Typh-Sec2a
244	29/01/2007	Operations	Retirement flight of DA2 from BAES Warton to RAF Coningsby.		Typh-Sec2a
245	12/02/2007	Operations	40th aircraft—BT 015 / ZJ 814 accepted off-contract (Block 2 twin seater).		Typh-Sec2a
246	29/03/2007	Future capability	Contract signed between GM NETMA and CEO EF GmbH for Future Capability Programme (FCP) Phase 1 (CP210) to provide UK Tranche 2 aircraft with an advanced Air-to-Surface capability, providing integration of Paveway IV and Litening III Laser Designator Pod.		Typh-Sec2a
247	29/03/2007	Systems	Contract signed between Typhoon IPT and Rolls-Royce for EJ200 engine module and spares support as the pre-runner to the Partnered Support Operational Phase 3 contract that is due 1 Jul 08. Contract valued at £24.1M.		Typh-Sec2a
248	29/03/2007	Operations	Formation of second Typhoon operational squadron, 11(F) Squadron, at RAF Coningsby.		DES Typh-Sec2a
249	30/03/2007	Operations	41st aircraft—BS 027 / ZJ 936 accepted off-contract (Block 2b single seater). 16th aircraft in 2006/07 financial year.		Typh-Sec2a
250	18/04/2007	Reform	Strategic Cooperative Arrangement signed by GM NETMA, CEO EF GmbH, 4 Nations & 4 EPCs. Objective: Improve delivery of programme performance, cost and time, including support and availability through life.		Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
251	27/04/2007	Operations	42nd aircraft—BS 028 / ZJ 937 accepted off-contract (Block 2b single seater). 1st aircraft in 2007/08 financial year.		Typh-Sec2a
252	09/05/2007	Reform	Risk Sharing Agreement signed between four Eurofighter Partner Companies which defines processes for sharing costs associated with risks. The processes will apply to new work/contracts.		Typh-Sec2a
253	16/05/2007	MOU	Supplement 4 to MOU 7 relating to In Service Phase Activities for Eurofighter signed by Partner Nations.		Typh-Sec2a
254	14/06/2007	Operations	Typh-IPTL & DEC(TA) approved Main Gate Business Case (Cat D) for OED+ upgrade programme providing enhancements to improve certain capability aspects so that the aircraft can be considered for operational deployment from Jul 08.	EF-IPT-ABW/05/04/07 dtd 11 Jun 07	Typh-Sec2a
255	21/06/2007	Tranche 3	A routine Board to Board meeting between Partner Nations and industry (Eurofighter GmbH and partner companies) lifted the block on Tranche 3 negotiations.		Typh-Sec2a
256	22/06/2007	Operations	First aircraft accepted off-contract from R2 Retrofit programme—BS 021 / ZJ 930.		Typh-Sec2a
257	25/06/2007	Exports—Saudi Arabia	CP129—proposed diversion of 24 aircraft from UK Tranche 2 production line to Saudi Arabia export order—agreed by DEC(TA) (Customer 1) on 25 Jun 07 and HQ 1 Gp (Customer 2) on 8 Jun 07.	EFIPT/06/10/01/10 (email filed 10 Jul 07 at 09:04)	Typh-Sec2a
258	26/06/2007	Exports—Austria	Eurofighter GmbH and Austrian Government announced reduction of the Austrian export order from 18 Typhoon to 15.		Typh-Sec2a
259	28/06/2007	Operations	43rd aircraft—BS 001—ZJ 910 accepted off-contract (Block 2 single seater).		Typh-Sec2a
260	29/06/2007	Operations	RAF Typhoon (3(F) Squadron) commenced operational duties for the first time when it began to take over responsibility for defence of the southern UK mainland from Tornado F3 (Southern Quick Reaction Alert (QRA(S))).		Typh-Sec2a
261	29/06/2007	Tranche 3	GM NETMA wrote to CEO EF setting out proposed way forward on Tranche 3 (T3) with the target of signing the T3 contract by Dec 08 and requesting an Initial Firm Price proposal by 14 Dec 07 for a Baseline Requirement and 4 Options.	Letter E/100 1000 S/10836/8353/07/NU dtd 29 Jun 07	Typh-Sec2a
262	29/06/2007	Tranche 3	GM NETMA wrote to MD EJ setting out proposed way forward on Tranche 3 (T3) with the target of signing the T3 contract by Dec 08 and requesting a Firm Price proposal by 14 Dec 07 for a Baseline Requirement and 3 Options.	Letter E/100 1000 S/10836/8454/07/NU dtd 3 Jul 07	Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
263	09/07/2007	ASTA	IAB (2* level) approved completion of Tranche 1 ASTA under a Restructured Programme Proposal and recognised the need to separate completion of Tranche 1 from consideration of Tranche 2. First Typhoon aircraft for Austria delivered to customer—AS001 (Block 5 capability standard).	D/IAB/01_10/16_04/4 (IABSec 1187) dtd 9 Jul 07	Typh-Sec2a
264	12/07/2007	Exports—Austria	44th aircraft—BS 032—ZJ 941 accepted off-contract (first Block 5 aircraft) (single seater).		Typh-Sec2a
265	27/07/2007	Operations	NETMA issued draft Request for Quotation to EF GmbH, requesting by 14 Dec 07 the submission of a contractually binding proposal for a Baseline Technical Requirement and 4 Options.	E/100 2000 S/ 10836/9695/07/NU dtd 30 Jul 07	DES Typh-Sec2a
266	30/07/2007	Tranche 3	Air Cdre Alex Deytrikh left the post of Typhoon IPT Leader.		DES Typh-Sec2a
267	10/08/2007	Staff	Air Cdre Chris Bushell assumed post of Typhoon IPT Leader.		DES Typh-Sec2a
268	28/08/2007	Staff	45th aircraft—BS 034—ZJ 943 accepted off-contract (Block 5 single seater).		DES Typh-Sec2a
269	29/08/2007	Operations	Second aircraft accepted off-contract from R2 Retrofit programme—BS 024 / ZJ 933.		DES Typh-Sec2a
270	29/08/2007	Operations	DE&S Typhoon IPT and BAES signed contract for Typhoon Maintenance & Upgrade (TMU) programme, 2-year contract that follows on from WASMU contract and will deliver a 50% increase in on-aircraft maintenance and upgrade capability. Contract value £10.9M.		DES Typh-Sec2a
271	11/09/2007	Operations	46th aircraft—BS 033—ZJ 942 accepted off-contract (Block 5 single seater).		DES Typh-Sec2a
272	13/09/2007	Operations	The Government of Saudi Arabia reached agreement with the UK Government to purchase 72 Eurofighter Typhoon aircraft and a contract was signed.		DES Typh-Sec2a
273	17/09/2007	Exports—Saudi Arabia	ILS MOU 7 Supplement 4 signed by all partner nations (Typh-IPTL for UK). Increases initial tranche of funding for Germany for activities outlined in Annex A to Supplement 2 to MOU7, noting that the amounts for the other 3 nations remain unchanged.		DES Typh-Sec2a
274	24/09/2007	Partner Nation Agreements -MOU 7 Supp 4	Flight trials to capture temperature data in gun ammunition rounds in different locations within the gun and ammunition box completed successfully on 24/25 Sep. This data will be used by DOSG to support safety case for firing the gun on Typhoon.		DES Typh-Sec2a
275	25/09/2007	Systems	Flight trials to capture environmental data on A/S stores/configurations completed successfully on 24/25 Sep. This data will be used to support A/S stores carriage clearance.		DES Typh-Sec2a
276	25/09/2007	Systems			DES Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
277	25/09/2007	Systems	Flight trials to capture temperature data on an ERU cartridge holder in the outboard pylon completed successfully on 24/25 Sep 07. This data will be used to support formal DGM/DOSG clearance of CBC4 ERU cartridges for Typhoon.		DES Typh-Sec2a
278	17/10/2007	Future capability	As part of implementation of initial air-to-surface capability (CP193), first successful self-designated guided release of a single inert Enhanced Paveway II Laser Guided Bomb, using BT005 (trials aircraft operated by BAES), at Aberporth range.		DES Typh-Sec2a
279	31/10/2007	Tranche 3	NETMA issued draft Request for Quotation to EJ GmbH, requesting by 14 Dec 07 the submission of a contractually binding proposal for a Baseline Technical Requirement and 3 Options.	E/100 2000 S/ 10836/12451/07/NU dtd 31 Oct 07	DES Typh-Sec2a
280	02/11/2007	Operations	47th aircraft—BS 035—ZJ 944 accepted off-contract (Block 5 single seater).		DES Typh-Sec2a
281	02/11/2007	Operations	DE&S Typhoon IPT & BAES signed contract for GS&S Package 1, a 7-yr contract to provide a performance based Guaranteed Repair Turn Round Time service covering four structural items on Typhoon aircraft. Contract value £11.2M.	Contract EF/00074	DES Typh-Sec2a
282	15/11/2007	Future capability	First drop of a single inert Paveway II Laser Guided Bomb (LGB) from in-service Typhoon (No 11(F) Sqn); LGB guided successfully onto target barge at Aberporth range by Rafael Litening III Laser Designator Pod fitted to BT005.		DES Typh-Sec2a
283	15/11/2007	Exports—Saudi Arabia	Signature by Typhoon IPT & BAES of Typhoon Aircraft Diversion & Replacement Agreement which diverts 24 RAF Tranche 2 aircraft to Saudi Arabia and provides replacement aircraft to the RAF.	EFIPT-ABW/02/05/19 dtd 15 Nov 07	DES Typh-Sec2a
284	19/11/2007	Operations	DE&S Typhoon IPT & BAES signed contract for Direct Line Feed Phase 2 (DLF Service for Typhoon consumables at RAF Coningsby & Warton Hanger 5), 5-yr contract for increased stock availability and reduced operational and process costs. Value £11.1M.	Contract EF/00056	DES Typh-Sec2a
285	19/11/2007	Operations	Contract for Direct Line Feed (DLF) Phase 2 Service for Typhoon consumables at RAF Coningsby & Warton Hanger 5 placed with BAES for a period of 5 years. Contract value £11.1M.		DES Typh-Sec2a
286	27/11/2007	Operations	48th aircraft—BT 016—ZJ 815 accepted off-contract (Block 5 twin seater).		DES Typh-Sec2a
287	12/12/2007	Operations	Contract for GS&S Package 2 placed with BAES for a period of 7 years, which will provide an "Availability Service" for a range of 25 BAES equipments. Contract value £6.3M.		DES Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
288	14/12/2007	Tranche 3	EF GmbH responded to NETMA on draft Request for Quotation for a Baseline Technical Requirement and 4 Options.	Ref 1EF letter LTR-J-O-E-0742-CEO100 dtd 14 Dec 07 Ref 2 E/1002000S/10836/16520/07/NU dtd 19 Dec 07	DES Typh-Sec2a
289	14/12/2007	Tranche 3	EJ GmbH responded to NETMA on draft Request for Quotation for a Baseline Technical Requirement and 3 Options.	Ref 1 EJ letter EJ107637 dtd 14 Dec 07 Ref 2 E/1002000S/10836/16524/07/NU dtd 19 Dec 07	DES Typh-Sec2a
290	19/12/2007	Exports—Denmark and Norway	EADS(D) suspended its Denmark and Norway export campaigns.		DES Typh-BMISec1
291	20/12/2007	Operations	49th aircraft—BS 036—ZJ 945 accepted off-contract (final Block 5 single seater). "Remaining" 6 aircraft out of 55 contracted under Tranche 1 comprises 4 development aircraft and 2 aircraft diverted to Austria which will be replaced under Tranche 2.		DES Typh-Sec2a
292	20/12/2007	Operations	Third aircraft accepted off-contract from R2 Retrofit programme—BS 026 / ZJ 935.		DES Typh-Sec2a
293	01/01/2008	Operations	Air Defence Operational Employment Date (ADX OED) declared, which enables Typhoon to deploy overseas on air-to-air missions.	EC(TA)/Typhoon/11/01 dtd 10 Dec 07	DES Typh-Sec2a
294	15/01/2008	ASTA	IAB approved Review Note for ASTA Tranche 2 hardware committing expenditure at an Approved Budgetary level of £75.5M CDEL and £8.2M IRDEL and requiring submission of Main Gate Business Case by mid 2008 which is to address through life support.	D/IAB/01_10/16_04/4 (IABSec 2257) dtd 15 Jan 08	DES Typh-Sec2a
295	22/01/2008	Tranche 3	NETMA wrote to Eurofighter calling for reconsideration of their Dec 07 proposal for Tranche 3. Letter E/1002000S/10836/914/08/NU dtd 24 Jan 08 also refers.	E/1002000S/10836/643/08/NU dtd 22 Jan 08	DES Typh-Sec2a
296	22/01/2008	Tranche 3	NETMA wrote to Eurojet calling for reconsideration of their Dec 07 proposal for Tranche 3. Letter E/1002000S/10836/918/08/NU dtd 24 Jan 08 also refers.	E/1002000S/10836/677/NU dtd 22 Jan 08	DES Typh-Sec2a
297	25/01/2008	Exports—Saudi Arabia	DGM NETMA and CEO EF signed the Salam Agreement under which 24 UK ac are diverted to Saudi, 48 ac are procured outside of core programme for Saudi.	E/7201400S/42385/1128/08/NU dtd 29 Jan 08	DES Typh-Sec2a
298	04/02/2008	Future Support	Office of Government Commerce (OGC) Gateway Review of Typhoon Future Support conducted 4–8 Feb 08 to examine progress of Future Support programme and likelihood of successful delivery.		DES Typh-Sec2a
299	13/02/2008	Tranche 3	Eurofighter submitted its revised proposal for Tranche 3.	LTR-J-O-E-0821-CEO100 dtd 13 Feb 08	DES Typh-Sec2a
300	13/02/2008	Tranche 3	Eurojet submitted its revised proposal for Tranche 3.	EJ107758 dtd 13 Feb 08	DES Typh-Sec2a

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
301	22/02/2008	Tranche 3	NETMA confirmed to Eurofighter GmbH receipt of the revised proposal for Tranche 3 and that NETMA/Nations wished to continue discussion on that proposal as a baseline.	E/7201000S/42446/2166/08/NU dtd 22 Feb 08	DES Typh-Sec2a
302	22/02/2008	Tranche 3	NETMA confirmed to Eurojet receipt of the revised proposal for Tranche 3 and that NETMA/Nations wished to continue discussion on that proposal as a baseline.	E/7301000S/10836/2168/08/NU dtd 22 Feb 08	DES Typh-Sec2a
303	01/04/2008	Operations	RAF Typhoon (3(F) Squadron) assumed full responsibility for defence of the southern UK mainland (Southern Quick Reaction Alert (QRA(S)) (role previously shared with Tornado F3).		DES Typh-Sec2a
304	01/04/2008	Operations	Typhoon declared to NATO in the deployable Air Defence—Advanced role.		DES Typh-Sec2a
305	03/04/2008	Tranche 3	Defence Board directed DG Typhoon & DCDS(EC) to produce a fuller evaluation of through life costs and capability to inform final decisions on Typhoon numbers later in 2008.		DES Typh-BMSec1
306	04/04/2008	Operations	Four aircraft declared Air Defence capable (FE@R).		DES Typh-Sec2a
307	21/04/2008	Operations	Signature by NETMA and Eurofighter GmbH of Loan Agreement for BS038 for purpose of testing. All testing tasks to be undertaken at BAES at Warton. Loan terminates on successful completion of GRT/SCT Tests or on 31 May 08, whichever occurs earlier.	E/7501110S/42324/4997/08/NU dtd 5 Apr (sic) 08	DES Typh-Sec2a
308	23/04/2008	Operations	BS36 (ZJ 943) of 17(R) Sqn landed without any undercarriage deployed at US Naval Air Weapons Station, China Lake, California while on Ex HIGH RIDER. Pilot unhurt.		DES Typh-Sec2a
309	30/04/2008	Operations	Signature by NETMA and Eurofighter GmbH of Loan Agreement for BT005 for purpose of Ground and/or Flight Trials. Aircraft to be operated from BAES at Warton. Agreement extends loan to 30 Apr 09.	E/7501110S/42324/4999/08/NU dtd 5 Apr (sic) 08	DES Typh-Sec2a
310	12/06/2008	Tranche 3	No 10 concurred with the Defence Secretary's minute (MSU 7/4/4/11G dtd 2 Jun 08) agreeing that UK could proceed with Tranche 3 negotiating strategy and propose a minimum UK offtake of 16 "new" aircraft (40 including the 24 SALAM replacement aircraft).	Email from Fletcher (No 10) to Ferguson (APS SofS)	DES Typh-Sec2a
311	19/06/2008	Tranche 3	UK proposal of minimum UK offtake of 16 "new" aircraft (40 including 24 SALAM replacement aircraft) tabled at meeting of Partner Nations.		DES Typh-Sec2a
312	24/06/2008	Tranche 3	BERR wrote to S of S supporting the proposal to indicate the minimum number of new aircraft (in addition to UK secured export aircraft) for the purpose of negotiations with the Partner Nations.	Letter in EFIPT-ABW/04/01/12	DES Typh-BMSec1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
313	25/06/2008	Exports	Agreement signed by NETMA and Typhoon IPT (agreed by Partner Nations) for temporary transfer of IPA1 from Industry to MOD UK to perform Hot and High Trials in Saudi Arabia. IPA1 will be returned to Industry by end Sep 08.	E/7201100S/42385/7001/08/NU dtd 24 Jun 08	DES Typh-Sec2a
314	01/07/2008	Operations	Multi-Role Operational Employment Date declared, which enables Typhoon to deploy on overseas operations with multi-role, air-to-surface capability.		DES Typh-Sec2a
315	25/07/2008	ASTA	OGC Gateway Review Investment Decision to confirm the full Business Case and benefits plan declared a Delivery Confidence Assessment at Amber/Green.	EFIPT-ABW/04/06	DES Typh-BMSec1
316	30/07/2008	Exports	NETMA, Eurofighter (EF) GmbH and MOD Germany signed "Austria -Transfer Agreement", transferring six Typhoon Tranche 1 aircraft from Germany to EF GmbH in support of the Austria export order. Germany to receive 6 Tranche 2 aircraft in replacement.	E/7201100S/42386/8585/08/NU dtd 31 Jul 08	DES Typh-BMSec1
317	01/08/2008	Tranche 3	IAB approved the Review Note for Typhoon Tranche 3 Long Lead Time Activities and Last Time Buys (see D/VCDS&2ndPUS/4/8/1 dtd 1 Aug 08)	Email in EFIPT-ABW/04/01/12 dtd 1 Aug 08	DESTyph-BMSec1
318	12/09/2008	Operations	Type Acceptance achieved for Tranche 2 aircraft.	Email in EFIPT/04	DES Typh-BMSec1
319	21/10/2008	Operations	First two Tranche 2 aircraft delivered to RAF Coningsby, witnessed by Min(DES)—BS 039 / ZJ 946 and BS 040 / ZJ 947.		DES Typh-BMSec1
320	27/10/2008	Operations	BS36 / ZJ 943 ("China Lake accident" aircraft) arrived at RAF Brize Norton from USA.		DES Typh-BMSec1
321	26/11/2008	Operations	3rd Tranche 2 aircraft—BS 038 / ZJ 946—accepted off-contract.		DES Typh-BMSec1
322	04/12/2008	Operations	Release to Service achieved for Tranche 2 aircraft.		DES Typh-BMSec1
323	05/12/2008	Main Development Contract	NETMA & Eurojet (EJ) GmbH signed agreement on EJ Main Development Closure—acknowledging completion of MDC work, achievement by EJ of Full Operational Clearance and the definition of the remaining activities to formally close the MDC.	E/7201100S/45000-30/13675/08/ NU dtd 9 Dec 08	DES Typh-BMSec1
324	19/12/2008	Operations	4th Tranche 2 aircraft—BS 041 / ZJ 948—accepted off-contract.		DES Typh-BMSec1
325	19/12/2008	Exports—Saudi Arabia	First Saudi Arabia delivery. Tranche 2 BS 042 accepted off-contract and delivered to RAF, then handed back to BAE Systems so that Royal Saudi Air Force (RSAF) can conduct their own acceptance process.		DES Typh-BMSec1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
326	16/01/2009	Tranche 3	MinSub requesting agreement, for purpose of current negotiations with PNs/Industry, UK's intention, subject to Departmental & HMT approval, to purchase 16 new Tranche 3 aircraft in accordance with Defence Board endorsed strategy.	DGT/06/10 dtd 16 Jan 09 in EFIPT-ABW/04/01/12	DES Typh-BMSec1
327	04/03/2009	Support	Contract for Typhoon Availability Service (TAS) placed with BAE Systems for a period of 5 years. Contract value £450M.		DES Typh-BMSec1
328	27/03/2009	Tranche 3	S of S wrote to Chancellor of the Exchequer with an update on MOD's examination across programme of expenditure; also lengthy background on Tranche 3 and reasons why UK needs to agree a way forward. D/MSU/7/4/4/11 dated 27 Mar 09.	Letter in EFIPT-ABW/04/01/12	DES Typh-BMSec1
329	30/03/2009	Operations	5th Tranche 2 aircraft—BS 037 / ZJ 944—accepted off-contract.		DES Typh-BMSec1
330	08/04/2009	Operations	6th Tranche 2 aircraft—BS 045 / ZJ 949—accepted off-contract.		DES Typh-BMSec1
331	22/04/2009	Tranche 3	Lord Mandelson, SofS BERR wrote to Chancellor of the Exchequer supporting Tranche 3 from the perspective of employment and exports.	Letter in EFIPT-ABW/04/01/12	DES Typh-BMSec1
332	19/05/2009	Tranche 3	Min(DES) signed the Ministerial Agreement which was previously signed by Germany, Italy and Spain on 2 Apr 09. The Agreement contains a statement of principles which will underpin the next stage of negotiations between NETMA and industry on Tranche 3.	D/MST/7/4/4/11 dtd 19 May 09 in EFIPT/ABW/04/01/12	DES Typh-BMSec1
333	20/05/2009	Operations	7th Tranche 2 aircraft—BS 047 / ZJ 950—accepted off-contract.		DES Typh-BMSec1
334	11/06/2009	Exports—Saudi Arabia	Roll Out Ceremony at BAE Systems' Warton site for the first two Typhoon aircraft produced for the Royal Saudi Air Force under the Salam Project. Attended by Min(AF).		DES Typh-BMSec1
335	12/06/2009	Tranche 3	Defence Board considered the paper on "Typhoon Tranche 3 and Future Support", and approved the recommendations in the paper.		DES Typh-BMSec1
336	15/07/2009	Tranche 3	HM Treasury letter to MOD SofS on Tranche 3 Main Gate Business Case, advising MOD to consult No 10.	Letter of 15 Jul 09	DES Typh-BMSec1
337	24/07/2009	Tranche 3	No 10 letter to MOD giving Prime Minister's agreement to Tranche 3 contract.	Email of 27 Jul 09 from MSU	DES Typh-BMSec1
338	31/07/2009	Contracts	Contracts for Tranche 3A signed between GM NETMA and CEOs of Eurofighter GmbH and Eurojet GmbH. UK to receive 16 new aircraft and 24 replacement aircraft for those diverted to Saudi Arabia. Overall contract value for UK c. £3Bn.		DES Typh-BMSec1
339	12/08/2009	Operations	8th Tranche 2 aircraft—BS 053 / ZK 301—accepted off-contract.		DES Typh-BMSec1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
340	21/08/2009	Operations	9th Tranche 2 aircraft—BS 052 / ZK 300—accepted off-contract.		DES Typh- BMSec1
341	23/09/2009	Operations	Tranche 2 Typhoon aircraft formally took over air defence duties in Falkland Islands.		DES Typh- BMSec1
342	20/10/2009	Operations	10th Tranche 2 aircraft—BS 054 / ZK 302—accepted off-contract.		DES Typh- BMSec1
343	29/10/2009	Staff	AVM Phil Osborn, Head of Capability (Deep Target Attack) assumed Senior Responsible Officer (SRO) role for Combat Air including Typhoon. Role fulfilled as Chair of Combat Air Programme Board. Replaced in this role by Air Cdre Mark Roberts on 30 Nov 10.		DES Typh- BMSec1
344	30/10/2009	Support	Contract for ongoing Typhoon support placed with QinetiQ for 3 years.		DES Typh- BMSec1
345	11/11/2009	Operations	11th Tranche 2 aircraft—BS 055 / ZK 304—accepted off-contract.		DES Typh- BMSec1
346	24/11/2009	Operations	12th Tranche 2 aircraft—BS 056 / ZK 305—accepted off-contract.		DES Typh- BMSec1
347	17/12/2009	Operations	13th Tranche 2 aircraft—BS 057 / ZK 306—accepted off-contract.		DES Typh- BMSec1
348	31/12/2009	Support	Contract for Partnered Support Operational Phase 3 (PSOP3—known as Engine Availability Service) placed with Rolls-Royce for a period of 10 years. Contract value £865M.		DES Typh- BMSec1
349	04/01/2010	Staff	Air Cdre Hugh Donohoe assumed post of Head of Typhoon Team.		DES Typh- BMSec1
350	20/01/2010	Operations	14th Tranche 2 aircraft—BS 058 / ZK 307—accepted off-contract.		DES Typh- BMSec1
351	22/04/2010	Operations	15th Tranche 2 aircraft—BS 059 / ZK 308—accepted off-contract.		DES Typh- BMSec1
352	27/05/2010	Operations	16th Tranche 2 aircraft—BS 060 / ZK 309—accepted off-contract		DES Typh- BMSec1
353	24/08/2010	Operations	Spanish Air Force Typhoon (ST 008) crashed shortly after take-off on a training flight from Moron Air Force Base, Spain. Pilot from Royal Saudi Air Force lost his life during ejection from aircraft. Spanish Air Force instructor survived ejection.		DES Typh- BMSec1
354	25/08/2010	Operations	Commander Spanish Air Force stopped all non-operational flying by Spanish Air Force Typhoon aircraft, pending further information being available about the crash on 24 Aug 10.		DES Typh- BMSec1

<i>ID</i>	<i>Date of Event</i>	<i>Description</i>	<i>Detail</i>	<i>Ref No</i>	<i>Entry made by</i>
355	25/08/2010	Operations	Subsequent to ST 008 crash, Typhoon Project Engineer (DES Typh-SysMgr) advised that RAF Typhoon flying continue without additional restriction given the lack of any evidence to undermine confidence in the extant aircraft safety case.		DES Typh-BMSec1
356	06/09/2010	Operations	6(Fighter) Squadron stood-up at RAF Leuchars.		DES Typh-BMSec1
357	30/09/2010	Operations	17th Tranche 2 aircraft—BT 024—accepted off-contract.		DES Typh-BMSec1
358	01/10/2010	Operations	Activation of the second Typhoon Main Operating Base, RAF Leuchars.		DES Typh-BMSec1
359	01/10/2010	Staff	Head of Typhoon Team (Air Cdre H Donohoe) received Letter of Delegation from DE&S Director Combat Air (AVM S Bollom).	DES/D-CA/LoD/1 dtd 1 Oct 10	DES Typh-BMSec1
360	14/10/2010	Operations	18th Tranche 2 aircraft—BS 064—accepted off-contract.		DES Typh-BMSec1
361	25/10/2010	Operations	19th Tranche 2 aircraft—BS 063—accepted off-contract.		DES Typh-BMSec1
362	17/11/2010	Operations	20th Tranche 2 aircraft—BT 017 / ZK 303—accepted off-contract.		DES Typh-BMSec1
363	30/11/2010		Air Cdre Mark Roberts, Head of Capability (Deep Target Attack) assumed Senior Responsible Officer (SRO) role for Combat Air including Typhoon. Role fulfilled as Chair of Combat Air Programme Board.		DES Typh-BMSec1
364	07/12/2010	Operations	21st Tranche 2 aircraft—BS 067 / ZK 312—accepted off-contract.		DES Typh-BMSec1
365	10/12/2010	Operations	22nd Tranche 2 aircraft—BT 025 / ZK 380—accepted off-contract.		DES Typh-BMSec1
366	15/12/2010	Operations	Joint Force (RAF and Royal Navy) Harrier fleet retired after 41 years of service. The fleet was taken out of service early as determined by the Strategic Defence and Security Review 2010.		DES Typh-BMSec1

ISBN 978-0-215-55919-7



9 780215 559197



PEFC/16-33-622