IN THE FIRING LINE

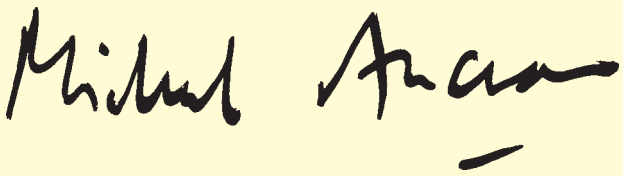
AN INVESTIGATION INTO THE HIDDEN COST OF THE SUPERCARRIER PROJECT AND REPLACING TRIDENT

GREENPEACE

THE RT HON MICHAEL ANCRAM QC MP
MEMBER OF PARLIAMENT FOR THE DEVIZES CONSTITUENCY

There are many unanswered questions about the renewal of the Trident programme in the future, not only as to cost at a time of severe pressures on the rest of the defence budget, but also as to the credibility of Trident as a deterrent in 20 years' time. I opposed the renewal in the House of Commons largely on the basis of this last major question. There is no guarantee that Trident submarines will still be undetectable in 20 years' time, indeed it is likely that they will not, and blunt weapons of mass destruction such as the Trident nuclear warhead will in a changed world be an increasingly uncredible threat – and therefore no deterrent. On top of that, the defence of the realm in the widest sense cannot be held hostage to Trident at a time of inevitably reducing defence expenditure. These were my views when the debate took place some time ago and they remain my views, if anything reinforced.

I congratulate the authors of this report for setting out the arguments in impressive detail. I may not agree with every one of them but I do endorse the overall thesis – as do increasing numbers of former leading military figures. I hope that our political leaders will give this report the serious consideration which it merits.



Michael Ancram
Former Defence Secretary

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This report was produced by Louise Edge, Disarmament Campaigner, Greenpeace UK. Thanks go to the following people for their support and advice: Nick Ritchie, Bradford University Disarmament Research Centre; Paul Ingram, Executive Director, British American Security Information Council; Martin Butcher, Consultant on international security issues; Kay Tabernacle; Dr Peter Burt, Project Director, Nuclear Information Service; Rob Sykes.

OVERVIEW

'...much of our planned investment in defence is at the very least of questionable relevance to the challenges we face now and in the future.'

General Dannatt, Head of the British Army, Chatham House, 15 May 2009

The current economic crisis means that in the coming decade the UK faces serious resource constraints. Most commentators agree that the political party that wins the next election will need to make sharp cuts in expenditure to stop the country falling deeper into debt. Indeed John Hawksworth, chief economist at PriceWaterhouseCoopers, estimates that *'a tightening of 10% of gross domestic product (GDP) – about £150bn at today's prices – will be needed over the next decade'*.[1]

At the same time the external world is changing at a fundamental level. International terrorism and crime, failed states, pandemic diseases, and above all climate change are emerging as the major threats to the UK's security.

It has now been acknowledged by all political parties that a root-and-branch review of the UK's foreign and defence policies is urgently needed, to clearly identify the major challenges to our security and to inform how best our limited resources are spent.

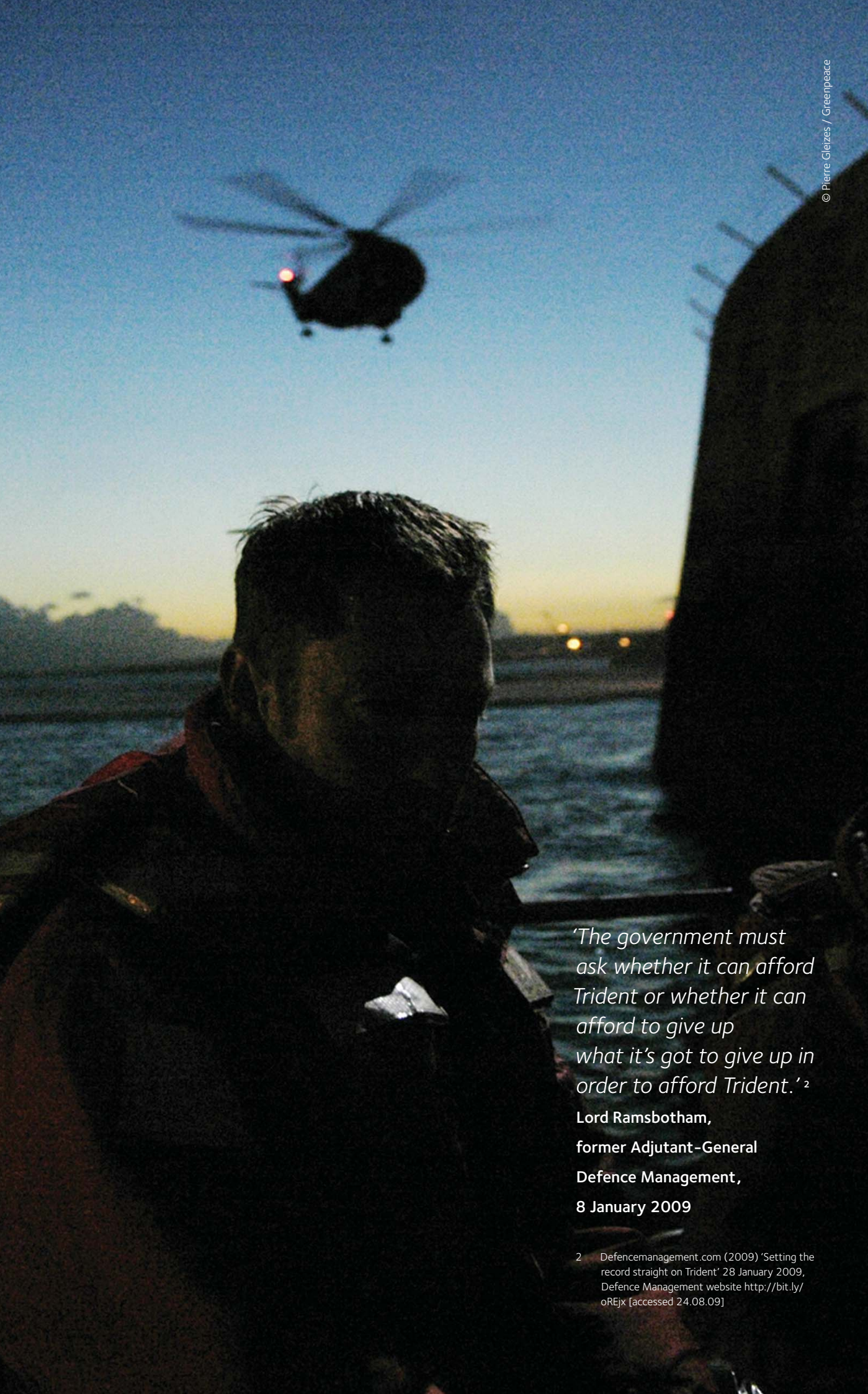
Yet at this very point the government is poised to go ahead with committing tens of billions to two Cold War-style defence projects – replacing the Trident nuclear weapons system and building and equipping Britain's largest ever aircraft supercarriers.

Before any money is committed it is vital to reassess whether these projects represent value for money in terms of delivering real security for the UK.

This Greenpeace investigation informs that debate by detailing the full financial costs of these two projects. It reveals that governments have consistently underestimated and misrepresented costs and presents evidence that the final bill will be far higher than publicly stated.

In fact In the Firing Line reveals evidence that Trident replacement will have a lifetime cost of £97bn and that the carrier project is set to far exceed its £31bn budget – giving a total cost for the two projects of approximately £130bn.

1 Guardian online http://bit.ly/efcUR [accessed 25.08.09]



'The government must ask whether it can afford Trident or whether it can afford to give up what it's got to give up in order to afford Trident.' [2]

Lord Ramsbotham, former Adjutant-General Defence Management, 8 January 2009

2 Defencemanagement.com (2009) 'Setting the record straight on Trident' 28 January 2009, Defence Management website http://bit.ly/oREjx [accessed 24.08.09]

OVERCOMMITTED DEFENCE BUDGETS

Even before the recession started to bite there was already a multi-billion pound black hole in the defence procurement budget – a hole that will become as large as £35bn over the next ten years, according to a leaked Minstry of Defence (MOD) report.[3]

This means that the UK defence budget – even if it were to escape cuts – literally cannot afford all the major defence projects currently in the pipeline.[4] These projects include:

- the new Astute-class attack submarine programme (£3.5bn for the first three of a possible seven)
- six Daring-class Type-45 destroyers (£3.6bn)
- **two new aircraft supercarriers and F35 Joint Combat Aircraft (£12–14bn)**
- **replacement for the Trident nuclear weapons system (£15–20bn)**
- the Future Rapid Effects System range of armoured vehicles for the Army (£6bn for 3,500 vehicles)
- 232 Typhoon fighter aircraft (£21bn), and
- 14 new Future Strategic Tanker Aircraft (£13bn).

All of the above figures are government estimates

It is clear that some military procurement projects will have to be cancelled or at least drastically curtailed in order to both balance the books and ensure that equipment for frontline ground operations, peacekeeping and disaster relief are not affected.

This briefing focuses on the true financial costs of two of the most expensive military projects in the pipeline: the replacement for the Trident nuclear weapons system and the two new aircraft supercarriers and the associated F35 Joint Combat Aircraft.

If allowed to proceed these two projects would dominate defence equipment expenditure for years to come. In terms of the government's most recent equipment procurement expenditure figure (£6.528bn in 2006–07[5]) the purchase cost of the two projects[6] would represent as much as 27% of the total military procurement budget over the proposed lifetime of the expenditure (2009–27).

This investigation presents powerful evidence that the two programmes will in fact cost far more than these official government estimates.

3 Leaked Ministry of Defence report reveals the MOD equipment programme is £35bn over budget http://bit.ly/yAnxO [accessed 24.08.09]

4 Ritchie N (2009) 'Stepping down the nuclear ladder: Options for Trident on a path to zero'. Disarmament Research Centre, Department of Peace Studies, University of Bradford. Available at www.brad.ac.uk/acad/bdrc/nuclear/Trident/briefing5.html [accessed 24.08.09]

5 Defence Procurement Agency (2007) Annual Report and Accounts 2006-07, London: The Stationery Office. Official Documents sponsored House of Commons papers http://bit.ly/P8kPp [accessed 24.08.09]

6 Based on the upper limit Trident estimate of £21bn and subtracting approximately £2.5bn of expenditure already incurred, mainly on development of the F35 aircraft for the supercarriers

'We have soldiers who are dying because of inadequate equipment.'

Lord Guthrie, ex-Chief of the Defence Staff, Observer interview, 28 June 2009

THE GOVERNMENT'S RATIONALE

Politicians, academics and members of the military were already questioning the value of both Trident replacement and the aircraft supercarriers before the credit crunch. This value assessment was not just based on costs but also on doubts over the strategic justification for utilising Cold War technologies in the context of the UK's defence requirements.

These strategic justifications have not been properly debated since the last Strategic Defence Review in 1998, a time before 9/11 and before the experience of the latest Iraq war and the ongoing war in Afghanistan; a time when military advisers were operating in a very different geo-political environment. As a result the UK government is still operating under a 20th century Cold War-style mindset. The UK's weapons systems are still designed to project the UK as a global military superpower in a manner that far exceeds the immediate requirements of defending the country itself.

But the world is changing fast and with it the security challenges we face. Climate change will have a huge effect on the use of our military resources, natural disasters will increase, essential resources such as fresh water will decrease and the resulting conflict and human displacement will have an impact on military strategy and interventions. The UK needs to seriously review what its foreign and defence objectives and priorities are going to be over the coming decades. It also has to decide, in that context, which of these objectives are affordable. To date, neither question has been answered.

'France and the UK will have to decide whether it is meaningful to retain costly nuclear arsenals that were developed for an enemy that no longer exists, in order to meet hypothetical threats against which such weapons are of questionable value.'

Hans Blix, former Director General of the International Atomic Energy Agency, WMD Commission report, June 2006

Flooding will increase with the changing climate, causing millions of people to lose their homes and jobs and be forced to seek new places to live.

Strategic communications and diplomacy are vital to future global security.

© Philip Reynaers / Greenpeace

'It is time to... stop the spread of nuclear weapons and to reduce the arsenals from another era. This is the moment to begin the work of seeking the peace of a world without nuclear weapons.'

Barack Obama, US President, speech in Berlin, July 2008

THE GLOBAL ATTITUDE

In the case of replacing Trident, the government's decision has to be made in the context of both the positive disarmament initiatives emerging from the US, and the Nuclear Non-Proliferation Treaty (NPT), which is coming up for review in May 2010.

The 2010 NPT Review meeting is crucial to a peaceful world because unless there are considerable changes the treaty itself could disintegrate. The last review conference in 2005 fell apart after countries failed to even agree an agenda. The reasons for failure were complex, but at their heart they reflected the gap between the states that do not have nuclear weapons and those that do. Non-nuclear states wanted the nuclear-armed states – Britain included – to honour their treaty commitments to move towards getting rid of their weapons. The nuclear-armed states wanted to focus on taking steps to ensure that no other new countries gained nuclear weapons. If the NPT is to continue to function as an effective global agreement, and if the 2010 international disarmament process is to stand any chance of moving forward, both the armed and unarmed states will need to shift their positions.

The good news is that over the last two years there have been significant shifts in the international debate about nuclear weapons. Two separate groups have injected new credibility and urgency into the possibility of nuclear disarmament. They are:

- the newly formed Global Zero initiative involving former heads of state from around the world, former foreign and defence ministers and top military commanders[7], and
- a parallel initiative by four influential American statesmen (Henry Kissinger, William Perry, George Schultz and Sam Nunn).[8]

Their work has already led to Barack Obama publicly backing the vision of zero nuclear weapons in April this year[9] and the announcement of new US-Russian negotiations to cut nuclear stockpiles further. With focused support their work could achieve much more.

Rather than planning to replace Trident and tying the UK into nuclear weapons for the next 40 years the UK government should be asking what measures the country could take, both symbolically and tactically, to support this growing international consensus and the NPT review process.

The government justified the aircraft supercarriers in the 1998 Strategic Defence Review on the grounds of needing to be able to deploy large-scale offensive airpower in future global *'force projection operations'*. However given the nature of likely future conflicts, it needs to be asked whether being able to project military power globally is an appropriate objective for the UK in the 21st century.

7 Global Zero website www.globalzero.org/en/about-campaign

8 2020 Vision Campaign website http://www.2020visioncampaign.org/pages/336 [accessed 24.08.09]

9 The White House website http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/ [accessed 24.08.09]

'It is becoming clearer that nuclear weapons are no longer a means of achieving security; in fact with every passing year they make our security more precarious.'

Mikhail Gorbachev, former Russian President, letter to the Wall Street Journal, 31 January 2007

Robert Key: *'General, give us all a Christmas present. Since we asked you last time, in January, are you any clearer about the unit cost of a Joint Strike Fighter?'*

General Sir Kevin O'Donoghue: *'No, I do not think I am, am I?'*

Robert Key: *'Back in January, General, you said it would be foolish to suggest a number without knowing the price. You clearly do have some idea of the price now. In that case, can you now tell us how many JSFs the UK is planning to buy?'*

General Sir Kevin O'Donoghue: *'At the moment, and this is still a decision-making process going on, we are looking at buying three, which are the Operational Test and Evaluation aircraft.'*

Robert Key: *'Beyond that?'*

General Sir Kevin O'Donoghue: *'Why do we not wait and see what the Operational Test and Evaluation comes out with?'*

Minutes of Evidence, Commons Defence Committee, November 2008,

General Sir Kevin O'Donoghue, Chief of Defence Materiel, MOD, and Robert Key, MP

THE REAL COSTS

TRANSPARENCY AND OPENNESS

All the figures given for Trident replacement and the aircraft supercarrier project in this investigative report are based on those made available by the UK and US governments. During the process of research a very stark contrast emerged between the two countries in terms of their transparency on military spending.

In the US extremely detailed information is made available to Congress about the cost of military projects. Every cent of expenditure has to be justified and approved by both the Congress and the Senate, which can choose to increase or decrease the amount asked for. This power was demonstrated recently when Congress refused funding for research into a new US nuclear warhead[10] for the second year running and is also reflected in the level of detail given about the increasing cost of the F35 planes the UK plans to purchase from the US.

In marked comparison, the UK parliamentary system allows for very little scrutiny of money spent on the nuclear weapons programme or the supercarrier programme. The UK government claims it is increasing its transparency because, for instance, it has increased estimates of Trident's in-service running costs from 1–2% to 5–6%. But these revised estimates are murky at best and do not show anywhere near the detail of the US equivalents.

10 The Non-Proliferation for Global Security Foundation website http://bit.ly/JbAH1 [accessed 24.08.09]

This is not the first time that the UK government has been reticent in giving proper details on military spending. In the 1970s and 80s the UK government spent £1bn on upgrading the Polaris submarine-launched ballistic missile without informing parliament or even specialist committees – and they withheld this information for over 12 years and through four changes of government.

When the £1bn hidden spend on the Chevaline programme was finally revealed, the Public Accounts Select Committee concluded that *'the failure to inform parliament or this committee until 1980 that a major programme on this scale was being undertaken, or that its cost was turning out to be so far in excess of that originally expected, is quite unacceptable. Full accountability to parliament in future is imperative'*.[11]

Yet despite the Public Accounts Select Committee's instruction huge costs are still being hidden, this time through a highly selective and incomplete style of presenting costs of key components of the UK's nuclear weapons programme and the supercarrier project. The very limited figures – given by the government's White Paper on Trident replacement and by the National Audit Office on the supercarrier project – had to be supplemented by a thorough examination of answers to parliamentary questions and the reports of specialist UK and US government committees. Research was hampered by the government's habit of answering questions in different ways at different times, for example sometimes including the costs of Aldermaston in Trident running cost estimates and sometimes not. It was further complicated by the government's habit of citing commercial confidentiality as a reason for withholding cost estimates or expected in-service dates for the Trident replacement or supercarrier programmes.

Consequently the report not only reveals additional costs connected to both programmes but raises a series of questions about costs that still require answers.

The government's topline figures

The government gives two figures for replacing Trident. The first is the cost of designing and building new submarines, warheads and 'infrastructure'. This was said in 2006 to be £15–20bn and to take up 3% of the defence budget every year between 2012–27. On top of that are the running costs, which will take up around 5–6% of the defence budget[13] (approximately £1.9–2.3bn) every year.[14] This gives a total of £72.9–89.5bn for building and operating a replacement for Trident.

Yet these estimates ignore key factors – factors which Greenpeace believes will push the final cost up to £97bn, or more than 8.5% of the defence budget every year over the system's 30-year lifetime.

The lifetime costs of the two supercarriers and their aircraft were estimated by government in 2005 to be £31bn, broken down as a £12bn procurement cost and £19bn running costs. Separate estimates of £10bn and £18bn have been given for buying and running the F35 planes – figures that appear to cover the cost of planes to be flown from the supercarriers and from linked land bases. However since 2005 the carriers' cost estimates have increased by £2.1bn. On top of this the cost of both buying and operating the F35 planes have spiralled – pushing the carrier project yet further over budget.

11 Ministry of Defence Chevaline Improvement to the Polaris Missile System, Ninth Report from the Committee of Public Accounts, HC 269 of Session 1981-82 http://bit.ly/EPPtn

12 The Acronym Institute website http://bit.ly/3PiX7N [accessed 24.08.09]

13 Defence White Paper: The Future of the United Kingdom's Nuclear Deterrent: Defence White Paper 2006. Available at http://bit.ly/fF9A2

14 HM Treasury (2009) Budget 2009: Building Britain's Future – Economic and Fiscal Strategy Report and Financial Statement and Budget Report. Available at http://bit.ly/MD4F3. The report notes that the 2009-10 defence budget was increased to fund current military operations, so the 2008-09 budget has been taken as a more realistic benchmark

'At a moment when the defence budget for equipment is heavily overdrawn and with other important areas of procurement apparently ring-fenced it is time to reflect on how thin the justification for Trident really is and to evaluate it fairly and rigorously against the opportunity costs.' [12]

General Sir Hugh Beach, former Master General of the Ordnance, Disarmament Diplomacy article, Summer 2008

The Astute class submarine programme, which is being built by BAE – the company likely to build any submarines for a Trident replacement programme – is currently running three and a half years late and 47.3% over budget.

EXAMPLES OF HIDDEN COSTS

SOME EXAMPLES OF DISCREPANCIES IN TRIDENT REPLACEMENT ESTIMATES

MISSING: the estimated £900m cost of conventional military forces directly assigned to support the nuclear force that should be included in Trident running costs
MISSING: the £250m costs of extending the life of the current Trident missiles.
MISSING: the estimated £3bn cost of buying next-generation missiles when the Trident missiles are ultimately withdrawn from service midway through the life of the replacement submarines.
MISSING: a percentage of the substantial cost of modernising the Atomic Weapons Establishment (AWE) – a modernisation that is in large part necessitated by the requirement to develop new warheads for the new Trident system.

For fully referenced details see TRIDENT: THE EXPENSIVE TRUTH p22-28

AIRCRAFT SUPERCARRIER PROJECT ESTIMATE DISCREPANCIES

MISSING: updated figures for the 2002 £10bn F35 aircraft procurement estimate to reflect the 70% leap in US government cost estimates between 2001–08.
MISSING: updated figures for the £12bn procurement cost estimate for the supercarrier project to reflect the increase in the estimated final cost for the aircraft supercarriers from £2.877bn in 2005 to £3.9bn, now reportedly £5bn, in 2009.
MISSING: detailed running cost estimates for the supercarriers that factor in costs for personnel, fuel, infrastructure and support vessels.
MISSING: updated running cost estimates for the F35 planes that reflect a projected doubling of F35 operating and support costs.

For fully referenced details see SUPERCARRIERS: THE EXPENSIVE TRUTH p38–47

Adding to these specific concerns, the UK's major military projects regularly exceed their projected budgets. As of 2008 the 20 biggest ongoing military projects were together running some 12% over budget and 483 months behind schedule according to the House of Commons Public Accounts Committee.[15]

15 House of Commons Public Accounts Committee (2009) Ministry of Defence: Major Projects Report 2008, HC 165 http://bit.ly/EGfIS. [accessed 24.08.09]

16 Daily Mail website http://bit.ly/4owtJa [accessed 24.08.09]

'If we are going to continue to use our armed forces with the same abandon we have in the last few years, a great deal of money is going to have to be spent equipping them properly. And thanks to the Trident programme and the credit crunch, that money is not going to be available.' [16]

Edward Heathcote Armory,

Daily Mail columnist,

16 January 2009

GREENPEACE IS CALLING FOR THIS GOVERNMENT TO:

- suspend any further funding of the Trident replacement and aircraft supercarrier programmes
- release a detailed breakdown of all projected procurement and in-service running costs of the Trident replacement and aircraft supercarrier programmes, and
- actively promote the aims of both the Global Zero initiative and the Nuclear Non-Proliferation Treaty.

GREENPEACE IS CALLING ON THE INCOMING GOVERNMENT FOLLOWING THE NEXT GENERAL ELECTION TO:

conduct a full foreign policy and strategic defence review that:

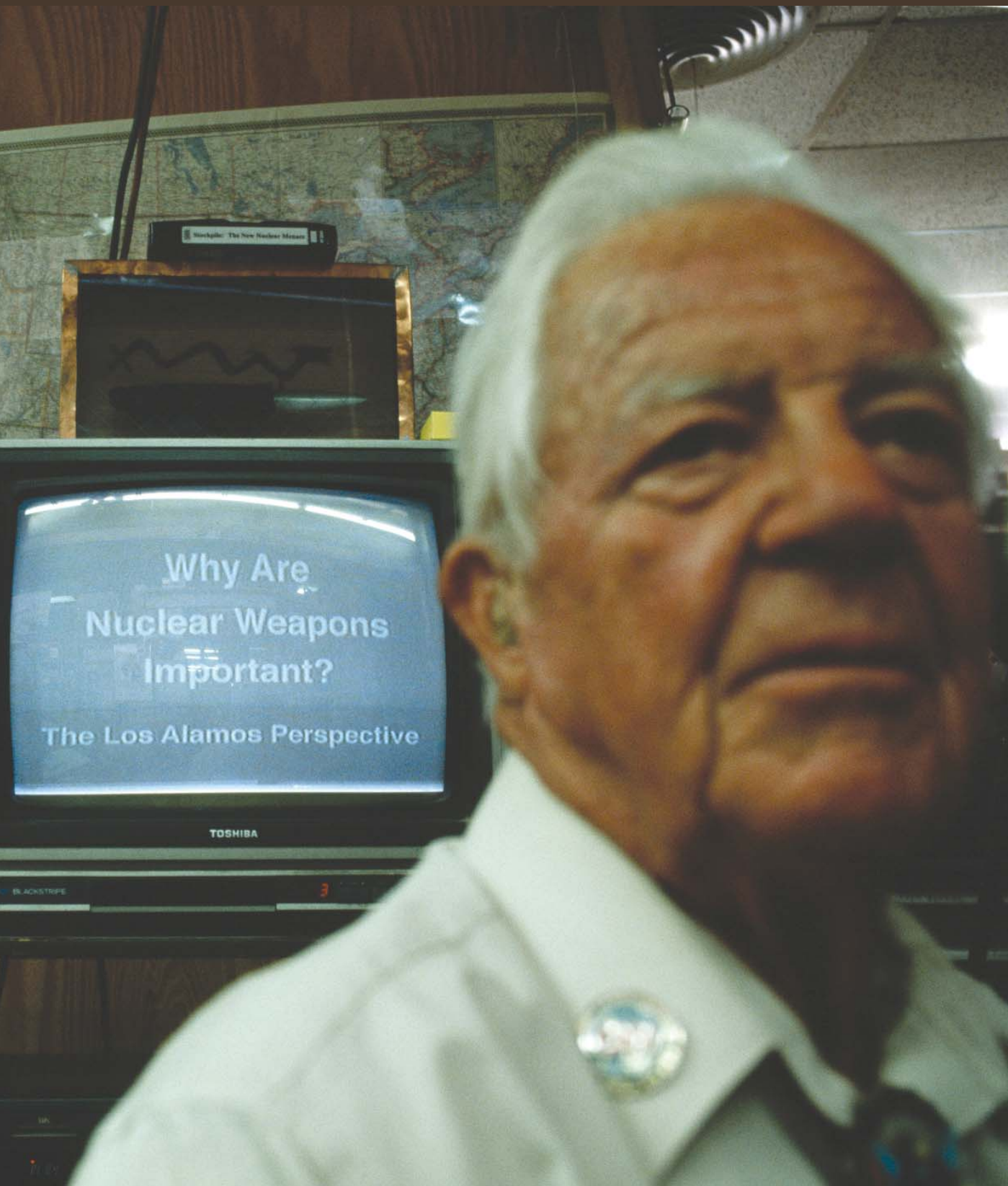
- re-examines the rationale for both the supercarrier project and Trident replacement and considers a range of options for Britain's future nuclear weapons strategy including non-replacement and the concept of extending the life of existing submarines by taking them off continual patrol and storing their nuclear warheads in secure onshore sites
- considers both projects in the light of alternative uses for equivalent defence (or other) expenditure
- thoroughly examines the implications of climate change for global security issues
- creates a transparent accounting procedure for all military expenditure, and
- actively promotes the aims of both the Global Zero initiative and the Nuclear Non-Proliferation Treaty.

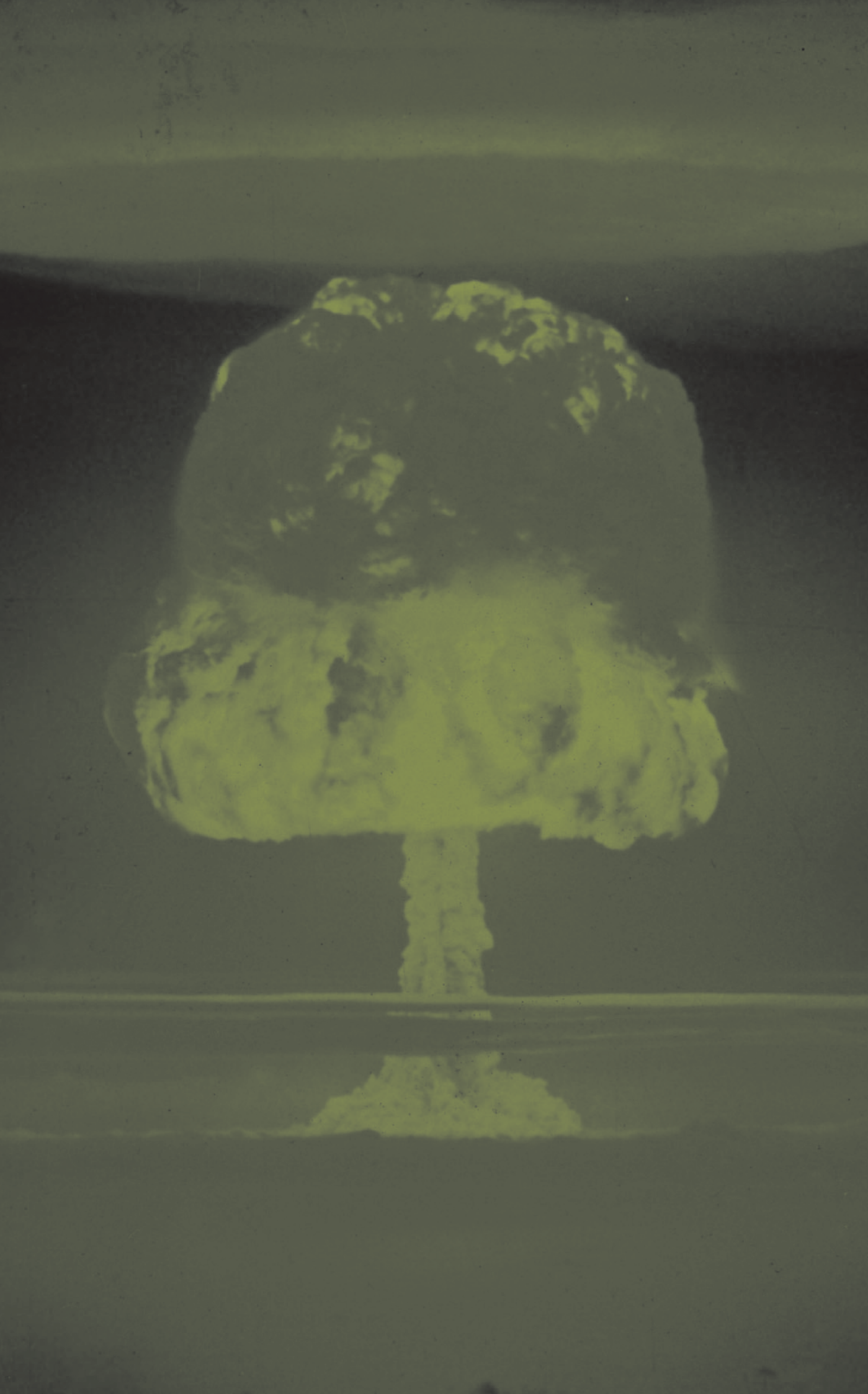
'There is a strong case for prioritising our security spending on what are likely to be the main security threats we face in the future, rather than building new weapons to fight the last war.'

Charles Clarke, former Home Secretary, speech to the Fabian Society, 29 November 2006

'We believe that whatever stabilising impact nuclear weapons may have had during the Cold War, in the new security environment of the 21st century any residual benefits of these arsenals are overshadowed by the growing risks of proliferation and terrorism.'

Global Zero – representing the views of 100 ex-defence and foreign ministers and ex-military leaders worldwide





PART ONE:
TRIDENT REPLACEMENT

TRIDENT:
THE OFFICIAL STORY

The government's proposal
The official government project costs

TRIDENT:
THE EXPENSIVE TRUTH

Design and build procurement
Submarine procurement
Warhead procurement
Other excluded procurement costs
In-service running costs

TRIDENT:
WHAT IS HAPPENING NEXT?

Big spending
Decision time
New submarines?
New warheads?

'The more you look at the practicality and utility of using weapons with the capability of the Trident system, the more useless they appear to be as deterrents of the types of violence against which we are currently, and for the foreseeable future appear likely to be, faced.'

Lord Ramsbotham, former Adjutant-General, House of Lords, 26 March 2009

TRIDENT: THE OFFICIAL STORY

THE GOVERNMENT'S PROPOSAL

The UK government plans to build up to four new ballistic missile submarines to replace the current Vanguard-class submarines which carry the Trident nuclear missiles. The first is intended to go into service by 2024 and the fourth one would retire around 2058.[17]

THE OFFICIAL GOVERNMENT PROJECT COSTS

The government's official figure for the procurement costs of replacing the Trident system, given in the 2006 Defence White Paper, is £15–20bn at 2006–07 prices (equivalent to roughly £15.8–21bn today). According to the White Paper these costs would hit home principally in the period 2012–27 and include:

- the cost of designing and building four new submarines, estimated at £11–14bn
- the cost of developing new warheads, estimated at £2–3bn, and
- estimated infrastructure costs of £2–3bn.

The Defence White Paper stated that these procurement costs would take up 3% of the defence budget each year 'over the main period of expenditure'.[18]

Sizeable as the projected acquisition costs are, most of the expense of replacing Trident would be in maintaining and running the new system. The government has stated, in the White Paper and more recently,[19] that these in-service running costs will take up 5–6% of the defence budget, but it has not quantified this in monetary terms. However, on the basis of the 2008–09 defence budget of £37.9bn,[20] 5–6% would represent £1.9–2.3bn per year, adding up to a total of £56.9–68.3bn (midpoint £62.55bn) over the system's 30-year life.

This means building and operating the Trident replacement will incur a total lifetime cost of £72.9–89.5bn (midpoint £81.2bn) in present-day terms, and will take up 8–9% of the current defence budget up to 2027. If the defence budget is cut then this percentage will rise.

However, a whole series of factors are set to push the final cost far higher. Greenpeace estimates this could be as high as £97bn and take up equivalent to 8.5% of the defence budget every year that Trident is in service.

17 'Replacing Trident two years on: what has happened'. A briefing paper by Nick Ritchie, May 2009, Department of Peace Studies, University of Bradford

18 The Future of the United Kingdom's Nuclear Deterrent: Defence White Paper 2006. Available at http://bit.ly/fF9A2

19 John Hutton, parliamentary written answer, 24 March 2009. They work for you website http://bit.ly/44E8h8 [accessed 24.08.09]

20 HM Treasury (2009) Budget 2009: Building Britain's Future – Economic and Fiscal Strategy Report and Financial Statement and Budget Report. Available at http://www.hm-treasury.gov.uk/d/Budget2009/bud09_completereport_2591.pdf. [accessed 20.06.09] The report notes that the 2009-10 defence budget was increased to fund current military operations, so the 2008-09 budget has been taken as a more realistic benchmark

'We are responsible for a large, complex, challenging programme extending over many years which has a lot of inherent risks [...] We think we have learned from recent experiences and can manage them more successfully now than we have done in the past, but that does not constitute a guarantee.'

Sir Bill Jeffrey KCB, Permanent Under Secretary of State, MOD, evidence to the Committee of Public Accounts, 19 November 2008

'The history of British defence procurement, from Blue Streak to the Eurofighter, is littered with wasteful projects driven by prestige and politics rather than military need.'

Financial Times leader, 3 September 2009

TRIDENT: UNCOVERING THE COSTS

MISSING COSTS

MISSING:
£10.5-15.5bn
Additional procurement costs
evidence shows that generational systems replacements double in cost

MISSING:
£900m
Additional in-service running costs
conventional military support excluded from government in-service running costs

MISSING:
£250m
Trident D5 missile life extension

MISSING:
£3bn
Procurement of next-generation missiles

TOTAL
£97bn

UNCLEAR COSTS

UNCLEAR:
£?
New facilities at AWE[C]

What percentage of the estimated £7.5bn additional investment at AWE up to 2015 should be added to the cost of replacing Trident?[D]

UNCLEAR:
£?
Further in-service running costs

Do the in-service running costs include:

- a percentage of the building costs of the Astute submarines – one role for which will be supporting the patrols of the Trident replacement submarine?
- US-UK cooperation – for example, the costs of using US satellites for targeting, the costs of maintaining a liaison office at STRATCOM and the costs of regular research visits to the US and potential investments in their research facilities (like the UK's past investment in the National Ignition Facility)?
- an adequate allowance for decommissioning the new submarines and dismantling both future warheads and redundant facilities at AWE, and storing the arising nuclear waste?
- an adequate percentage of the running costs for the Faslane and Coulport bases – home to the nuclear submarines and their missiles?

A Equivalent to 3% of the defence budget every year between 2012–27. The Future of the United Kingdom's Nuclear Deterrent: Defence White Paper 2006. Available at http://bit.ly/fF9A2

B 5–6% of the defence budget (revised in 2006 from 1–2%)

C £3.7bn has been committed to AWE development between 2005 and 2011. This is set to rise to 3% of the 2006 defence budget, presumably up until the development programme ends in 2015. On the basis of a £32bn 2006 defence budget this would be £960m per annum.

TRIDENT: THE EXPENSIVE TRUTH

THE ACTUAL TOTAL PROJECT COSTS, UNCERTAINTIES AND HIDDEN COSTS

DESIGN AND BUILD PROCUREMENT

Sir Bill Jeffrey of the MOD recently admitted to the Public Accounts Committee that the December 2006 White Paper gives only *'a ballpark estimate of costs'*.[21] This estimate is based upon the cost of the existing Trident nuclear weapon (given in the White Paper as *'some £14.5bn'*), but expressed as a range to reflect uncertainty about the budget.[22] In current prices this original Trident cost would now be £15.2bn.

21 The United Kingdom's Future Nuclear Deterrent Capability - Public Accounts Committee, Examination of Witnesses (Questions 1-19), 19 November 2008. Parliament website: http://bit.ly/KrHHi [accessed 13.08.09]

22 NAO Report Ministry of Defence: The United Kingdom's Future Nuclear Deterrent Capability, page 26: http://bit.ly/1OEP9h [accessed 24.07.09]

23 Preview Magazine, the Department of Defence and Equipment Support, April 2007, http://bit.ly/184n8y

'The decision to maintain the posture of continuous at-sea deterrence and replace the Vanguard class of SSBN will require us to deliver one of the largest defence procurement programmes that this country has ever seen.'[23]

Rear Admiral Andrew Mathews, Director General, Nuclear, Preview Magazine, April 2007

MISSING: DOUBLE THE COST OF THE PREDECESSOR

According to a recent report by the British American Security Information Council, *'a rule of thumb based on past experience with similar generational replacements would suggest that new weapons systems tend to cost around twice as much as their predecessors.'* For example, the Poseidon C3 missile system, which entered service in 1971, cost the US $13.9bn in 1996 prices, while the cost of its Trident II D5 successor (which entered service in 1990) was $30bn – so the system cost more than doubled in 20 years.[24] The current government estimate is only just over a third more than the original Trident system. **Doubling the overall procurement costs of the present Trident system would give a cost of £29bn in December 2006 prices (nearly £30.5bn in current prices).**

In late 2008, the National Audit Office (NAO) raised concerns about the MOD's £15–20bn estimate in its report on the UK's future nuclear weapons system.[25] This report notes that the MOD accepts that *'the White Paper cost estimates are not sufficiently robust to provide an accurate baseline against which progress can be measured and budgetary control exercised'.* Areas of concern the report highlights include:

- the fact that basing estimates on the cost of the existing system fails to take into account a number of factors, including *'variations in the operational requirement, developments in the submarine industry and expected profit margins and fluctuations in the cost of materials'*
- uncertainty in the incorporation of the effects of inflation into cost estimates
- the fact that existing cost estimates include no provision for Value Added Tax, even though the tax treatment of the programme has not yet been determined
- the assumption that the pound/dollar exchange rate will remain constant throughout the programme. This is important as an estimated 30% of work connected to the acquisition of the Trident programme was undertaken in the US, a situation unlikely to change for any successor system,[26] and
- the danger that estimates may not include adequate contingency funds. Indeed the report notes the Treasury recommendation that major project budgets should include such a contingency to take account of an *'observed systematic tendency for the costs to be underestimated'* in such projects.

While acknowledging that the MOD intends to announce more accurate estimates *'at the end of the concept phase in autumn 2009', the report observes that 'until some of the key design decisions [...] are taken, it will inevitably be difficult'* to refine procurement cost estimates.

Considering each of the main elements of the programme in turn sheds more light on some of the financial risks to which it is exposed, and on the hidden costs that inflate the official figures for procurement.

24 Dunne P, Perlo-Freeman S and Ingram P (2007) The real cost behind Trident replacement and the carriers. London and Washington, DC: BASIC. Available at http://www.basicint.org/nuclear/beyondtrident/cost.pdf

25 National Audit Office (2008) Ministry of Defence: The United Kingdom's Future Nuclear Deterrent Capability. Available at http://bit.ly/1OEP9h [accessed 24.07.09]

26 Parliament website: http://bit.ly/4eDFgi [accessed 24.07.09]

27 Telegraph website: http://bit.ly/ml4B3 [accessed 13.08.09]

'A [defence] review is absolutely overdue and needed. I find it very hard to see how the current Trident delivery system – the submarines – survives that review. The plan for renewing them strikes me as [wrong].'[27]

Lord Malloch Brown, former Minister of State, Foreign and Commonwealth Office, Daily Telegraph interview, 22 July 2009

SUBMARINE PROCUREMENT

In addition to its general criticisms of the overall project costing, the NAO report highlights other issues that could affect the cost of the submarines.

One major issue is monopoly supplier risk – which arises because the UK submarine industry is dominated by BAE Systems and Rolls Royce, the likely suppliers of the submarines themselves and their nuclear reactors. BAE Systems is well known for delivering projects late and over budget, with recent examples including the Astute Class submarines (three and a half years late, and around £1.3bn and 47.3% over budget[28]), the Type 45 Destroyer ships (two years late and £1.5bn[29] and 29%[30] over) and the Nimrod reconnaissance aircraft rebuild (six years late and £700m and 25% over[31]). Moreover, both companies have staff seconded to the Nuclear Propulsion and Future Submarines Integrated Project Teams, and the NAO observes that the MOD will *'need to establish effective procedures to ensure that those suppliers represented within the Department's teams cannot exert undue influence which might undermine the cost-effective spending of public money'*.

The NAO report also raises concerns about the MOD's assumption that the UK submarine industry will continue to be economically sustainable and that the future deterrent programme will not have to bear the cost of subsidising it. A project subsiding the industry in this way would not be without precedent, as the NAO itself reportedly allowed the MOD to allocate additional costs against the Astute submarine programme *'to sustain industry through to the future deterrent programme'*.[32]

WARHEAD PROCUREMENT

The Defence White Paper's estimate of £2–3bn for either refurbishment or replacement of nuclear warheads seems improbably low, given that one senior Whitehall source is reported as saying that *'over time, the most expensive bit of an independent British nuclear deterrent is maintaining the capability to manufacture our own warheads'*.[33]

Despite this, the government has failed to include any part of an estimated £7.5bn of additional investment going towards *'maintaining the capability to manufacture'* warheads at the Atomic Weapons Establishment (AWE) sites in Berkshire – a redevelopment which includes building simulation facilities that will enable the government to develop and manufacture new warheads without breaking the ban on live nuclear warhead tests.

THE ALDERMASTON AND BURGHFIELD FACILITIES

The UK's capability to design and manufacture new warheads (or to refurbish old ones) centres on the Atomic Weapons Establishment's (AWE) sites at Aldermaston and Burghfield. However, since signing the Comprehensive Test Ban Treaty, which forbids it from carrying out any further live nuclear warhead tests, the UK has been developing facilities that obviate the need for conventional nuclear tests by simulating various aspects of a warhead's performance. As a result, massive expenditure is being ploughed into developing new facilities at Aldermaston and Burghfield, announced in 2002 and intended to be completed by 2015.[34] Despite the fact that designing or building new warheads in an era without nuclear testing would be impossible without these facilities, the AWE development work appears to have been excluded from both the Defence White Paper's warhead procurement and infrastructure costings.

28 Public Accounts Committee Report 'The UK's Future Nuclear Deterrent Capability' 19 March 2009 HC250.

29 Don Touhig MP, House of Commons Committee of Public Accounts, uncorrected transcript of oral evidence, 23 March 2009. Available at the parliament website http://bit.ly/yTDDs [accessed 24.07.09]

30 The Telegraph website http://bit.ly/60g4j [accessed 24.07.09]

31 House of Commons Defence Committee (2004) Sixth Report, 14 July http://bit.ly/aQZdH [accessed 24.07.09]

32 Rusiresources http://bit.ly/zq8RD [accessed 24.08.09]

33 Daily Mail website http://bit.ly/13lVyK [accessed 24.08.09]

34 AWE Aldermaston and Burghfield, Site Development Context Plan (SDCP) 2005-15 http://www.awe.co.uk/Contents/Publication/f0677f7SDCP-text.pdf

'The central question is whether in this post-Cold War and asymmetric world we still need an independent nuclear deterrent? Trident was designed for that Cold War where the enemy was known and the threat quantifiable [...] Today the enemy is often indistinctly known and the danger is unquantifiable. The threat to use nuclear weapons in these circumstances is not only illogical but incredible.'

Michael Ancram,

former Defence Secretary,

the Independent,

6 December 2006

WHAT WILL THE NEW FACILITIES BE USED FOR?

The AWE programme includes two supercomputers, a hydrodynamic test facility, a massive laser and laboratories for materials testing.[35] The MOD has repeatedly stated that these large-scale developments are needed to sustain the existing nuclear warheads and that they are necessary irrespective of any decision to develop a new warhead.[36]

However, the 2006 Defence White Paper describes the associated investments as being *'both to ensure that we can maintain the existing warhead for as long as necessary and to enable us to develop a replacement warhead if that is required'*. Statements by AWE also indicate that the developments are connected to designing new warheads, rather than maintenance. In 2002 it stated that *'the capability to build a successor [to Trident] will have to be achieved without conducting nuclear tests [...] We are therefore developing a complex science-based program at AWE that will require special facilities across a variety of disciplines'*.[37] In 2006, AWE Chief Scientist Dr Clive Marsh said that *'our research and development work splits into two main but inter-related areas. The first is the requirement to maintain the current Trident stockpile. The second is to develop our overall warhead design and assurance capabilities, including the ability to provide a new warhead lest our government should ever need it as a successor to Trident. Most of our research is conducted in this capability area.'* [38]

Leading US nuclear weapons scientists have also stated that this kind of investment by nuclear laboratories in lasers, hydrodynamic testing, sub-critical testing and supercomputers is not needed if the aim is to keep existing nuclear warheads safe rather than to develop new warhead designs.[39, 40]

35 Atomic Weapons Establishment (2003), The Way Ahead, AWE Annual Report 2002. AWE Reading

36 Ministry of Defence (2006) The Future of the UK's Nuclear Deterrent strategy: Memorandum from the MoD HC835:Ev 5, The Stationery Office, London

37 Atomic Weapons Establishment (2002) The AWE Aldermaston Site Development Strategy Plan AWE, Reading p3

38 Available on the Youtube website http://bit.ly/SayAk [accessed 24.07.09]

39 Garwin, Richard L. (1995) 'The Maintenance of Nuclear Weapons stockpiles without nuclear explosion testing' 24th Pugwash workshop on nuclear forces; Civak, Robert (2000) 'Managing the U.S. Nuclear Weapons Stockpile: A Comparison of Five Strategies, 'Tri-Valley CAREs www.trivalleycares.org/ ManagingStockpileReport.pdf; von Hippel, Frank (1997) 'The Department of Energy's Stockpile Stewardship Program', Journal of Federation of American Scientists Public Interest Report 50 (1): p7-9 www.fas.org/ faspir/archive/1990-2000/January-February1997.pdf

40 Safety and Reliability and the Science Based Stockpile Stewardship Program Institute for Energy and Environmental Research, Takoma Park, USA www.ieer.org/reports/nss.pdf

The AWE's primary research area is developing warhead design and assurance capabilities, in case the government needs a successor to Trident.

COSTING THE NEW FACILITIES

The exact cost of the AWE developments is impossible to pin down as the government has failed to provide comprehensive figures. However, in addition to paying for a £5.3bn 25-year management and operation contract awarded to AWE Management Limited, a private consortium set up to run the sites in 2000, then extended in 2003,[41] the government has begun to pour huge additional sums into AWE.

The 2006 Defence White Paper announced extra investment at AWE of £1.05bn between 2005–06 and 2007–08. Since then, further investment has been announced for the years 2008–09 to 2010–11 to the tune of £2.65bn.[42] The White Paper makes clear that this trend will continue: 'Further investment will be necessary and early in the next decade the costs of AWE are likely – at their peak – to be the equivalent of about 3% of the current defence budget.' Given that 3% of the 2006 defence budget is £960m and that the AWE site development plan indicates work will continue through to 2015 this could add some £3.8bn between 2011–15, creating a total investment in AWE between 2005–15 of £7.5bn.

Parliamentary questions have confirmed that both the original £1.05bn[43] and the subsequent £2.65bn[44] are additional to the funding for the £5.3bn management and operation contract, though at least one government spokesman had earlier given the impression that all costs were to be covered by that contract.[45]

WHAT WILL THE EXTRA MONEY BE SPENT ON?

Information on what exactly this additional money is being spent on is almost completely lacking, and questions about the costs of new facilities regularly[46] go unanswered on the grounds of 'commercial confidentiality'.[47] However one recent parliamentary written answer, which cited a planned capital expenditure at AWE for 2008–09 of £384m (far less than the £800m investment announced for that year)[48] would seem to imply that at least part of it must be being spent on operating costs over and above those budgeted for in the original management and operation contract.

As to the split in investment between supporting the existing warheads and designing their replacements, Defence Minister John Reid claimed in 2005 that *'it is not possible precisely to assign costs at Aldermaston between work to support current and possible future deterrent systems'*.[49] However, Greenpeace (along with other analysts[50]) believes that, while some of the work may relate to necessary updating of old facilities, the very nature of most of the new facilities being built makes it clear that their purpose is to enable the development of new nuclear warhead designs – a clear demarcation which ought to make it possible to assign the correct proportion of costs to *'possible future deterrent systems'*.

With such a lack of transparency concerning the proportions of expenditure being assigned to capital as opposed to running costs, or to the existing Trident system as opposed to its proposed replacement, it is impossible for anyone outside government to know what percentage of AWE costs should be directly designated as capital costs for the replacement warhead. Nevertheless it is clear that substantial costs related to the designing of a future warhead are already being incurred and will continue in coming years – and that these should be included in the government's cost estimate for the procurement of a Trident replacement.

41 Written Ministerial Statements, 22 January 2003, Defence, Atomic Weapons Establishment, They work for you website: http://bit.ly/kLGvu [accessed 24.07.09]

42 They work for you website: http://bit.ly/1aFbPU [accessed 24.07.09]

43 Hansard 3 Nov 2005: column 1257W http://bit.ly/r3qZ8

44 Nuclear Weapons: Finance, Hansard: 28 April 2009 : Column 1158W http://bit.ly/5OvU1

45 Geoff Hoon in 2004 – 'The costs of the continuing programme (at AWE) are included in the overall incentivised price of the 25-year AWE management and operation contract': Hansard 24 February 2004 : Column 363W. Available at parliament's website: http://bit.ly/18WPMG [accessed 24.07.09]

46 They work for you website: http://bit.ly/hDETy [accessed 24.07.09]

47 They work for you website: http://bit.ly/mwdrM [accessed 24.07.09]

48 Quentin Davies, parliamentary written answer, 3 November 2008. Available at They work for you website: http://bit.ly/3wYFhO [accessed 24.07.09]

49 Hansard 14 June 2005 : Column 337W parliament website: http://bit.ly/iBfUh [accessed 24.07.09]

50 Including the Nuclear Information Service, CND and Acronym Institute http://bit.ly/JeEPI [accessed 24.08.09]

'More nations have given up nuclear weapons over the past generation than have developed them.[...] None of these countries regards itself as any less secure than before.'

Robin Cook, former Foreign Secretary, the Guardian, 29 July 2005

ADDITIONAL COSTS EXCLUDED FROM THE GOVERNMENT'S £15-20BN PROCUREMENT ESTIMATES

MISSING: THE COST OF EXTENDING THE LIFE OF THE EXISTING TRIDENT D5 MISSILES

The UK shares its US-designed and built Trident D5 missiles in a pool with the US. The D5 was due to be taken out of service in 2019, but the US decided to extend its life until 2042[51] before replacing it with a different system. The UK will contribute £250m[52] (£262.5m in present-day terms) towards extending the life of these missiles, but this cost is not included in total government estimates. Since these refurbished missiles would equip the UK's replacement submarines when they enter service from 2024, it is legitimate to regard them as part of the project cost.

MISSING: THE PROCUREMENT COSTS OF REPLACING THE D5 MISSILES

As mentioned above, the US has decided to retire the D5 missile in 2042. This is a decade before the UK's new submarines would retire, so a replacement missile will need to be designed and produced. The 2006 Defence White Paper says that any cost estimate for buying these new missiles would be 'highly speculative', and merely notes that the cost of the UK's current D5 missiles was £1.5bn at 2006 prices – though as we have already noted, the cost of replacing a weapons system is frequently around double that of its predecessor so an estimated cost of £3bn would be reasonable.

51 Page 14, National Audit Office (2008) Ministry of Defence: The United Kingdom's Future Nuclear Deterrent Capability. Available at http://bit.ly/1OEP9h [accessed 24.08.09]

52 Ministry of Defence and Foreign and Commonwealth Office (2006) The Future of the United Kingdom's Nuclear Deterrent, White Paper, Cm. 6994. London: The Stationery Office. MOD website: http://bit.ly/fF9A2

New facilities at Aldermaston are likely to be used primarily for developing new warheads, yet the cost of these developments is not included in the Trident replacement estimates.

IN-SERVICE RUNNING COSTS

The NAO's 2008 report criticises the MOD's in-service running cost predictions for a Trident replacement, and called on them to produce *'robust estimates of whole-life costs'*.[53] Indeed evidence shows that governments have consistently lied about the true costs of operating Britain's nuclear weapons.

In the past the UK government repeatedly gave the in-service running cost of nuclear weapons as 1–2% of the defence budget. For instance in 2002 Geoff Hoon informed parliament that running costs for Trident took up 1% of the defence budget between 1990 and 2000 rising to 2% in 2000–01[54].

Indeed governments have regularly given the impression that the total costs for Trident – ie combined capital and operating costs – have ranged between 2–4% of the annual defence budget[55].

However the 2006 Defence White Paper revised this figure upwards drastically – giving the in-service running costs alone for both the current system and the planned replacement system as 5–6% of the defence budget.

The then Defence Secretary, Des Browne, implicitly revised the historical in-service cost estimates in 2007 when in response to a parliamentary question he stated that the average in-service costs of Trident between 1998 and 2005 had actually been 4% of the defence budget.[56]

Under cross-examination from the Commons Defence Committee in early 2007 Browne explained that this hike in costs was the result of an internal review of costs of the nuclear weapons system and had led government *'to revise information that previous governments may have put into the public domain'*.[57]

Yet since the government has never given a full breakdown of what is included in the in-service running costs of either the Trident replacement or the current system, it remains unclear whether even this increased 5–6% figure actually factors in all the in-service running costs of the UK's nuclear weapons.

Some general indication of the original basis of Trident in-service running cost estimates was given in a 2007 parliamentary written answer by Browne, in which he stated that the Defence White Paper estimate drew on:

'projections based on the actual and planned future maintenance and operating costs of the current system, including manpower costs; assessments of in-service costs of system components; studies of potential infrastructure and disposal costs; projected costs of the Atomic Weapons Establishment; and an assessment of the impact of risk.'[58]

Further details of the projected costs are hard to come by. However parliamentary answers have confirmed that 5–6% estimates:

- **EXCLUDE** the cost of the conventional forces assigned to support the nuclear force. The Government classifies these forces as either 'committed' to Trident or 'contingent' i.e. supporting Trident is only part of their role. The cost of 'committed' forces was given in 2009 as approximately £30m per annum and the cost of contingent forces as approximately £300m per annum.[59] At the very least the cost of committed forces – totalling £900m over 30 years - should be added to Trident in service running costs. This figure does not include a percentage of the cost of the contingent forces which is £9bn over 30 years.

Until government gives a line by line breakdown of their estimates and answers the questions in the graphic on page 20, it is impossible to know if all other costs are fully taken into account.

53 National Audit Office (2008) Ministry of Defence: The United Kingdom's Future Nuclear Deterrent Capability. Available at http://bit.ly/1OEP9h [accessed 24.08.09]

54 For example, Geoff Hoon, in a parliamentary written answer of 11 June 2002 (available on the parliament website: http://bit.ly/Zoxvq [accessed 24.07.09]) gives a table of annual cost figures from 1990-91, in which cumulative running costs of the nuclear deterrent are shown as 1% of the defence budget in every year from 1990-91 to 2000-01 when it rises to 2%.

55 Parliament website: http://bit.ly/4h2wS [accessed 24.07.09]

56 Parliament website, 12 March 2007: Column 56W at http://bit.ly/rLctS [accessed 24.07.09]

57 House of Commons Defence Committee, uncorrected transcript of oral evidence, 6 February 2007 Q.345. House of Commons website http://bit.ly/3JArbc [accessed 24.08.09]

58 Des Browne, parliamentary written answer, 10 January 2007. Available at the They work for you website: http://bit.ly/166Ke0 [accessed 24.07.09]

59 Parliamentary answer 8 June 2009 http://bit.ly/u1RKz [accessed 10/09/09] and Parliamentary answer March 2007 http://bit.ly/uLKOi [accessed 10/09/09]

'We see day by day our defence budget so obviously squeezed that it is causing actual deaths among our servicemen. No government who comes in after the next election will be able to avoid looking again at the question of Trident replacement; that is not credible.'

Lord Owen, former Foreign Secretary,

House of Lords, 26 March 2009

TRIDENT: WHAT IS HAPPENING NEXT?

BIG SPENDING

The government is due to make some significant expenditure decisions over the next five years:

- 2009–15 – billions to be dedicated to upgrade the Atomic Weapons Establishment at Aldermaston.
- 2009–10 – the proposed new submarine designs will be presented and an initial gate decision made on whether to commit further design development funds.[60]
- 2010–15 – a decision will be made on whether to commit funds towards either designing and building new warheads or extending the life of existing warheads.
- 2012–14 – the main gate decision will be made on whether to commit funds to building new submarines.

DECISION TIME

Contrary to the impression given by the media, the go-ahead has not yet been granted to replace Trident. The March 2007 parliamentary vote merely approved an in-principle decision to replace the existing Trident system. It authorised a concept phase of research and design work for replacement submarines to carry the existing Trident missiles.[61] It was made clear to MPs before the vote that it was not binding in terms of the go-ahead for the entire programme, and that parliament would be able to revisit the decision to build replacement submarines when it took the submarine main gate decision.[62]

NEW SUBMARINES?

THE INITIAL GATE DECISION

In the meantime, the initial gate decision will see the government decide whether to proceed with detailed designs of the submarines on the basis of the design concepts and revised cost estimates that are presented.[63] At this point, if the government decides to go ahead, an estimated 15% of total procurement costs – ie £1.1–2.1bn – will be committed.[64]

The initial gate decision was originally intended to be taken in September 2009, when parliament is in recess. But following parliamentary and media pressure senior officials briefed the media that the decision would be delayed until after the 2010 NPT meeting. However, this statement has since been denied by other government departments, leaving it unclear whether the decision is delayed or not.

THE MAIN GATE DECISION

The main gate decision on the submarines, which will decide whether the rest of the acquisition funds would be committed, is expected sometime between 2012–14.

60 Memorandum from Michael Codner, House of Commons Defence Committee hearing on The Future of the UK's Strategic Nuclear Deterrent: The Strategic Context, The Stationery Office, London, June 2006, p. Ev 72. http://bit.ly/qyukJ – in this memo Codner states 'the major procurement investment decision would be made at main gate. This is likely to be at least 85% of the total procurement cost. The bulk of the remaining likely maximum of 15% of expenditure will be committed at initial gate.' The government estimates submarine procurement costs are £11-14bn

61 University of Bradford website http://bit.ly/10HeSO [accessed 24.08.09]

62 Summary of parliamentary decision: http://bit.ly/1OEP9h [accessed 24.08.09]

63 Public Accounts Committee Inquiry on the United Kingdom's Future Nuclear Deterrent Capability, uncorrected transcript of oral evidence, 19 November 2008. Acronym Institute website http://bit.ly/21bRH3 [accessed 24.08.09]

64 Memorandum from Michael Codner, House of Commons Defence Committee hearing on The Future of the UK's Strategic Nuclear Deterrent: The Strategic Context, The Stationery Office, London, June 2006, p. Ev 72. http://bit.ly/qyukJ

'The world is on a precipice of a new and dangerous nuclear era.'

Henry A. Kissinger and George Schultz, Wall Street Journal, 4 January 2007

NEW WARHEADS?

According to the 2006 Defence White Paper, decisions on whether to replace (or refurbish) the current warhead are likely to be needed in the next parliament – ie after 3 June 2010. In November 2008 the then Defence Secretary John Hutton confirmed that the government *'will come back to this House to have a vote on [the development of new nuclear warheads] if and when the need arises'*.[65] The government will decide whether to extend the life of the existing warheads through remanufacture, or instead to design and produce a new warhead. Any plans to produce a new warhead with different capabilities would be controversial as it could represent an upgrade to the UK's nuclear weapons, in contravention of our international commitments to move towards disarmament, namely the Nuclear Non-Proliferation Treaty.

65 Hansard HC Deb, 10 December 2008,c644. They work for you website http://bit.ly/P49JO [accessed 24.08.09]

'What we need is both vision – a scenario free of nuclear weapons. And action – progressive steps to reduce warhead numbers and to limit the role of nuclear weapons in security policy.'

Margaret Beckett, former Foreign Secretary, speech to the Carnegie International Non-Proliferation Conference, 25 June 2007

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PART TWO: SUPERCARRIER PROJECT

'We can't afford the cost of the aircraft carriers, the cost of the Joint Strike Fighters to go on them, and all the replenishment, escort and protecting vessels. We can't afford that without a major increase in funding.'

Andrew Brookes, a former RAF pilot and analyst at the International Institute for Strategic Studies[66]

8 July 2008

66 Quoted by Richard Taylor-Norton, in the Guardian.

SUPERCARRIERS: THE OFFICIAL STORY

The government's proposal
The official government project costs

SUPERCARRIERS: THE EXPENSIVE TRUTH

Supercarrier procurement
Supercarrier in-service running costs
Aircraft procurement
Aircraft in-service running costs
Figuring it out: the F35 numbers game

SUPERCARRIERS: WHAT IS HAPPENING NEXT?

Service delays
Empty supercarriers and obsolete aircraft in operation
Makeshift defence
Irrational spending

SUPERCARRIERS: THE OFFICIAL STORY

THE GOVERNMENT'S PROPOSAL

Over the coming decade the government is planning to build two huge new aircraft supercarriers, the Queen Elizabeth class. At 265 metres long and over three times the displacement of the existing Invincible class carriers, these *'four acres of moveable sovereign airfield'*[67] will be the largest warships ever deployed by the Royal Navy – so large, indeed, that UK naval bases will need to be altered to accommodate them and they will be unable to make use of most ports in the world. The project represents a massive and controversial expansion of the UK's offensive air capability.

The MOD plans to equip the supercarriers with the US-designed F35B Lightning II, a short take-off/vertical landing (STOVL) Joint Strike Fighter (JSF) aircraft, to be built by US company Lockheed Martin with assistance from Northrop Grumman and BAE Systems. As well as up to 36 of these combat aircraft – an estimated total of 80, including spares – each supercarrier is also supposed to carry four maritime airborne surveillance and control (MASC) aircraft, yet to even be designed, and/or Merlin or Sea King anti-submarine warfare helicopters (which are already in service).[68] There would also be an unspecified number of combat aircraft assigned to the RAF for land bases and additional ones held in reserve to replace damaged planes, bringing the total proposed aircraft acquisition to 150.

67 Dr Lee Willett, Royal United Services Institute, cited in Syson D (2008) 'The £4 billion Airfix Kit: Behind-the-scenes at Britain's biggest warship', Daily Mail. Available at http://bit.ly/moBp [accessed 24.07.0]

68 Bob Ainsworth, Minister of State (Armed Forces), House of Commons Written Answer, 9 October 2007. Available at the They Work For You website: http://bit.ly/3Roft [accessed 24.07.0]

'In a world where power is no longer the sole preserve of nation states, and where machinery is no longer only about defence, we need new joined-up machinery in Whitehall.'

Lord Paddy Ashdown, former leader, Liberal Democrat Party, IPPR National Security Strategy launch, June 2009

UK naval bases would have to be altered at huge cost to accommodate the new aircraft supercarriers

THE OFFICIAL GOVERNMENT PROJECT COSTS

Calculating the true costs of the aircraft carrier project is complicated by two major factors. Not only has the government offered a series of widely varying and apparently contradictory estimates for different parts of the project – failing even to offer any figures at all for some elements – but crucially it has declined the opportunity to clarify the number of planes its estimates are based on.

WHAT WE DO KNOW

The official total lifecycle costs of the three core projects was forecast by the MOD in December 2005 to be £31bn, of which £12bn was allocated to acquisition costs and £19bn to running costs.[69] This estimate does not appear to have been updated since 2005. The three core projects are:

- the aircraft supercarriers
- the F35B combat aircraft, and
- the maritime airborne surveillance and control aircraft.

Separate estimates of £10bn and £18bn have been given for buying and running the F35 planes – figures that appear to cover the cost of planes to be flown from the supercarriers and from linked land bases. Also separate estimates have been given for buying and operating the supercarriers of £3.9bn and £6.4bn respectively.

As we shall see the costs of both the supercarriers and F35 planes have risen substantially since this estimate was first made. However given the lack of transparency about the project it is impossible to quantify exactly how large the final bill will be. What is clear is that it will be far more than the government's £31bn estimate.

69 House of Commons Defence Committee (2005) Future Carrier and Joint Combat Aircraft Programmes: Second Report of Session 2005–06. Available at the parliament website http://bit.ly/JTS4q [accessed 24.07.0]

'If you have a full-scale defence review, and all the parties are now agreed to that, then you have some very very hard choices to be made. It is not rocket science. A defence review has to identify our foreign policy objectives, establish the military resources necessary to achieve these objectives and then decide how much you are able to spend.'

Sir Menzies Campbell, former Liberal Democrat leader, the Scotsman, 18 July 2009

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When the government cost estimates for the supercarriers come under scrutiny, it is clear they simply do not add up.

SUPERCARRIERS: THE EXPENSIVE TRUTH

SUPERCARRIER PROCUREMENT

The first official cost estimate for the two supercarriers is from 1999, when the MOD envisaged a final (known as outturn) acquisition cost of around £2bn *'including combat system and initial support costs, but excluding the aircraft'*.[70] However, over the last decade this estimate has progressively increased (*see graphic on page 40*). This is partly due to the MOD's indecision over whether to build a STOVL-configured ski-jump design or a traditional carrier with aircraft launching catapults and arrestor gear – it eventually settled on a design that could do both.[71] It is also partly because BAE systems – the prime contractor – had to work alongside a different key supplier, Thales UK, to build the ships to the latter firm's design.[72] The most recent official total acquisition cost figure given by the National Audit Office (NAO) in 2008 was £3.9bn.[73] This price hike was despite a 2003 review that adopted a smaller design in a bid to counter the rising costs.[74]

As a result of a one to two-year delay in the production schedule announced in December 2008, only months after contracts were finally signed with the members of the Aircraft Carrier Alliance (the now expanded group of contractors who are to build and fit out the ships), the contracts are currently being renegotiated. Independent comment website Navy Matters predicted: *'It can only be expected that the overall cost of the two ships will go up substantially from the currently expected £3.9bn.'*[75]

In December 2008 former Secretary of Defence John Hutton admitted that a renegotiation of costs is indeed under way, but refused to give details[76]. However in July 2009, a leaked memo from the lead contractors indicated that the cost of the aircraft supercarriers is set to rise to £5bn[77]. If correct this means a £1.1bn cost increase over the last year and a £2.1bn cost increase since the government gave its £31bn cost estimate for the aircraft carrier project in 2005.

70 Defence Select Committee, Session 1998-99, Eighth Report,10 November 1999, Memorandum submitted by the Ministry of Defence on the Major Procurement Projects Survey, 10 May 1999. Available at http://bit.ly/T4yFx. Initial support costs relate to the ships' sea trials prior to their being declared operational, and are therefore regarded as a component of the procurement cost

71 Memo of May 2003, reproduced in Written Evidence, Defence Select Committee Eighth Report, 9 July 2003. House of Commons website http://bit.ly/CHzMv [accessed 26.08.09]

72 Navy Matters website http://bit.ly/1oW2l [accessed 26.08.09]

73 NAO (2008) Ministry of Defence Major Projects Report 2008: Project Summary Sheets. Report by the Comptroller and Auditor General. HC 64-II Session 2008-2009: 18 December 2008. Available at http://bit.ly/16MEsM [accessed 26.08.09]. These cost projections are typically quoted in outturn prices, so should be affected only by changes in inflation rate forecasts, not by year-on-year inflation itself

74 The UK Defence Forum website http://bit.ly/2hdTZ9 [accessed 26.08.09]

75 Navy Matters (2008) '2008 in Review: The Admiral has no Clothes', 14 December. Available at http://navy-matters.beedall.com/ [accessed 26.08.09]

76 They work for you website http://bit.ly/ENcZU [accessed 26.08.09]

77 BBC website http://bit.ly/11uj3s [accessed 26.08.09]

'How can it be that it takes 20 years to buy a ship, or aircraft, or tank? Why does it always seem to cost at least twice what was thought? Even worse, at the end of the wait, why does it never quite seem to do what it was supposed to? The issue is a mystery, wrapped in an enigma, shrouded in an acronym.'

Ministry of Defence report, leaked to the Times,

24 August 2009

SUPERCARRIER IN-SERVICE RUNNING COSTS

OFFICIAL GOVERNMENT COSTS: £6.4bn

The only official estimate of the supercarriers' through-life operating costs which Greenpeace has been able to discover was given in January 2003 by Lord Bach, the then Minister for Defence Procurement, as £6.4bn. A contemporary report in the Guardian also refers to a £6.5bn contract to maintain the ships over their service life.[78]

The basis for Lord Bach's estimate was not specified so the following questions arise:

- does it include estimated fuel costs of up to £1.25bn? Information about fuel costs comes from a parliamentary answer in which Bob Ainsworth, then Minister of State for the Armed Forces, stated, vaguely, that *'the estimated cost of fuel for 12 months is some £12.5 million'*.[79] This could refer to the first 12 months of each supercarrier's operation, even though these periods will be two years apart, or it could refer to the first year just one supercarrier is in service. But even if £12.5m was for a year's consumption by both supercarriers their total fuel bill across their potential 50-year[80] service life would be £625m – or £1.25bn if the £12.5m figure referred to just one of the supercarriers. Clearly with oil prices anticipated to rise over the long term these costs could increase substantially.

- does the estimate include the cost of support vessels?

- does the estimate include personnel costs?

- does the estimate include infrastructure costs, such as the cost of upgrading UK naval bases to make them capable of berthing the new supercarriers? In 2008 Parliamentary Under Secretary for Defence Quentin Davies stated that this upgrading will cost £112m,[81] but he gave no further explanation of the sum or which budget it would be paid from.

78 Cassy J (2003) 'Unions fear £9bn mess if carrier shared', Guardian, 27 January. The Guardian website http://bit.ly/8be9u [accessed 26.08.09]

79 They work for you website http://bit.ly/VYkrp [accessed 26.08.09]

80 Naval Technology website http://www.naval-technology.com/projects/cvf/ [accessed 26.08.09]

81 Quentin Davies, parliamentary written answer, 20 November 2008. They work for you website http://bit.ly/48lyiC [accessed 26.08.09]

'It is really sad to see that the justification for the aircraft carriers is jobs in Scotland when the justification should be that they are required for the defence of the country. What we need is a very rapid defence review to ascertain what kind of armed forces we want.'

Colonel Bob Stewart, the first British United Nations Commander in Bosnia and a senior defence analyst, the Scotsman, 18 July 2009

COST INCREASES:
SUPERCARRIER PROJECT

A Defence Select Committee, Session 1998–99, Eighth Report, 10 November 1999, Memorandum submitted by the Ministry of Defence on the Major Procurement Projects Survey,10 May 1999: http://bit.ly/T4yFx [accessed 11.08.09]

B NAO website: http://bit.ly/eCBFo [accessed 11.08.09]

C NAO website: http://bit.ly/4yrQx [accessed 11.08.09]

D NAO website: http://bit.ly/LCNZM [accessed 11.08.09]

E Memo of May 2003, reproduced in Written Evidence, Defence Select Committee Eighth Report, 9 July 2003 http://bit.ly/CHzMv [accessed 11.08.09]

F Navy Matters website: http://bit.ly/1oW2l [accessed 11.08.09]

G NAO website: http://bit.ly/FVDq6 [accessed 11.08.09]

H NAO website: http://bit.ly/EH4Gy [accessed 11.08.09]

I NAO website http://bit.ly/ngRPl [accessed 11.08.09]

J NAO website: http://bit.ly/124WtC [accessed 11.08.09]

K NAO website: http://bit.ly/13Szc9 [accessed 11.08.09]

L NAO website: http://bit.ly/16MEsM [accessed 11.08.09]

M BBC online: http://bit.ly/11uj3s [accessed 11.08.09]

NOTE: unless stated otherwise all figures are outturn price estimates – ie factoring in anticipated inflation

£2.9bn[I]
Nov 2005

The MOD Major Projects Report still estimates a reduced total acquisition cost of

£??bn[J]
Nov 2006

The MOD Major Projects Report drops all reference to a total acquisition cost

£??bn[K]
Nov 2007

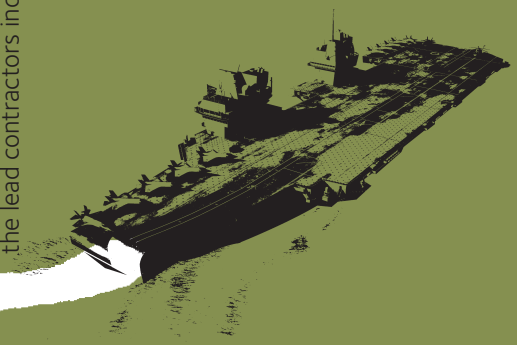
The MOD Major Projects Report still does not mention a total acquisition cost

£3.9bn[L]
Jul 2008

The UK government signs contracts to build the carriers and the MOD Major Projects Report confirms a total acquisition cost of

£5bn[M]
Jul 2009

In December 2008 the UK government renegotiates contracts after delaying the in-service date for the supercarriers. Then in July 2009 a leaked memo from the lead contractors indicates the cost of the supercarriers is set to rise to



AIRCRAFT PROCUREMENT

Far more expensive than the building and operating of the supercarriers themselves will be the buying and operating of the F35 aircraft which they exist to carry.

The UK was the first country to buy into the US-led F35 project when, in December 1995, they signed up to the aircraft's Concept Demonstration phase.[82] This phase was completed in 2001 and the UK then signed up to the programme's Engineering and Manufacturing Development phase,[83] (subsequently renamed the System Development and Demonstration [SDD] phase[84]). The UK is also involved as a senior partner in the F35's Initial Operational Test and Evaluation (IOT&E), as part of which it ordered three test aircraft in March 2009.[85]

At various times between 2002[86] and 2008[87] the government has stated the total acquisition cost for the F35 Joint Strike Fighter (JSF) plane programme is up to £10bn depending on aircraft numbers, around £2bn of which has already been allocated for design and development[88] – leaving £8bn to buy combat aircraft. But there is no clarity on how many aircraft will be bought in the end. In 2004 the government stated that up to 150 aircraft may be needed, depending on operational requirements,[89] but since then officials have appeared reluctant to publicly commit to a figure.[90] Despite recent reports that the UK is actually only expected to order 138 of the aircraft,[91] it is reasonable to assume that the upper limit of £10bn corresponds, or originally corresponded, to an intended purchase of 150 aircraft.

Cost estimates for the F35s are complicated further because the aircraft are intended to fulfil a land-based as well as a supercarrier-borne role. This means that the supercarrier-borne F35s would probably be operated by both the Royal Navy and the Royal Air Force – but the RAF would also have additional aircraft of its own. Commentator Navy Matters suggested that just over half the aircraft (80 out of an original presumed order of 150) will be needed to fulfil the supercarrier role, but the government has not given any obvious clarification. Furthermore, a large percentage of the total order will be needed to replace worn-out aircraft, or aircraft undergoing maintenance.[92]

AIRCRAFT IN-SERVICE RUNNING COSTS

OFFICIAL GOVERNMENT COSTS: £18bn

The total in-service running costs of – presumably 150 – F35s was estimated in 2002 as up to £18bn, including *'the provision of spares, fuel, training, storage, aircrew, ground-crew and station personnel, and flying station service costs including utilities, and the maintenance of runways and hangars'*.[93] It appears that no more recent estimate has been given.

82 NAO (2000) Ministry of Defence Major Projects Report 1999. Report by the Comptroller and Auditor General. Page 106. HC 613 Session 1999-2000: 6 July 2000 National Audit Office website http://bit.ly/18pHol [accessed 26.08.09]

83 NAO (2001) Ministry of Defence Major Projects Report 2001. Report by the Comptroller and Auditor General. HC 330 Session 2001-02: 23 November 2001. National Audit Office website http://bit.ly/4yrQx [accessed 26.08.09]

84 NAO (2002) Ministry of Defence Major Projects Report 2002. Report by the Comptroller and Auditor General. HC 91 Session 2002–03: 4 December 2002

85 Ministry of Defence website 18 March 2009 John Hutton announces purchase of three test aircraft: http://bit.ly/y0UYJ

86 They work for you website http://bit.ly/3YnEAU [accessed 26.08.09]

87 For example Quentin Davies, parliamentary answer, Hansard Commons, November 20, 2008, col. 667W; see also MOD (undated) 'Defence factsheet: Joint Combat Aircraft (JCA)', available at http://bit.ly/MebTa [accessed 26.08.09]

88 NAO (2007) Ministry of Defence Major Projects Report 2007: Page 6, summary of post main gate projects. National Audit Office website http://bit.ly/13Szc9 [accessed 26.08.09] also Bolkcom, C (2009) F35 Lightning II Joint Strike Fighter (JSF) Program: Background, Status and Issues. Washington, DC: Congressional Research Service. Federation of American Scientists website http://bit.ly/jv6aj [accessed 26.08.09]

89 Memorandum from MOD to Commons Defence Select Committee, in Defence – Sixth Report, 14 July 2004. House of Commons website http://bit.ly/BV8zI [accessed 26.08.09] 'The current UK planning assumption is for 150 Short Take Off and Vertical Landing (STOVL) aircraft. Final numbers will depend on the outcome of ongoing work to confirm overall future offensive air capability requirements.' MOD website: http://bit.ly/rnbEK [accessed 27.07.09]

90 The Herald newspaper recently quoted one spokesman as saying that a definitive decision will be taken 'once the final unit price is known and our defence requirements assessed': Bruce, I (2009) 'Spiralling costs threaten British US fighter jet order', the Herald, 8 January. The Herald website http://bit.ly/oaWk2 [accessed 26.08.09]

91 The Herald website http://bit.ly/3wIX8s [accessed 26.08.09]

92 According to a 2001 DOD planning document reproduced (without source reference) by Navy Matters, over half the total number of aircraft is needed for attrition alone – but it is impossible to obtain definitive figures for this. http://navy-matters.beedall.com/jca1-1.htm

93 They work for you website http://bit.ly/Y7HCd [accessed 26.08.09]

MASC AIRCRAFT

The supercarriers are also supposed to carry four Maritime Airborne Surveillance and Control (MASC) aircraft[94] to provide *'assured airborne surveillance and control through the surveillance of air and surface targets and the battle management of airborne assets'*.[95]

The assessment phase for the MASC began in September 2005 and the first study contracts were awarded in 2006. However no acquisition or in-service running cost estimates have been given for the MASC aircraft, and one defence commentator recently claimed that funding for the project has been deferred, with existing Sea King helicopters likely to fill the role until 2022.[96]

FIGURING IT OUT: THE F35 NUMBERS GAME

F35 PROBLEMS

The MOD's unwillingness to commit to ordering a given number of F35s (let alone placing any firm orders, beyond three demonstration aircraft[97]) has already been mentioned. This attitude drew sharp criticism from the UK Defence Select Committee in a June 2008 report:

'We note that the MOD considers that one of the benefits of the JSF programme is that it does not have to decide on the number of JSF aircraft it will acquire "at the start". While we acknowledge that UK participation in the programme provides this flexibility we are surprised that the MOD does not consider it an issue that it does not know how many JSF aircraft it requires because it is "at an early stage in the programme". We take issue with the term "early stage" as the MOD has already spent in the order of £1bn on the JSF programme and the first aircraft supercarrier which the JSF aircraft will operate from is expected to enter service in 2014 – just six years away.'[98]

One factor underlying this evasive language could be the aircraft's troubled gestation. Its development and production schedule has been repeatedly delayed (see graphic on page 52) by engineering issues and the UK's chosen variant, F35b, has weight problems in particular. Restructuring the F35 development programme has also had a serious impact on costs. In late 2005, a dispute arose because the US was reluctant to grant the UK full access to the aircraft's technology, without which it would not have been able to upgrade, modify or even maintain its F35s without US assistance. In early 2006 the UK even considered pulling out of the F35 programme, and began to cast around for a viable alternative, but the disagreement was ultimately resolved.[99] In the RAF itself, some reportedly opposed the choice of the F35B variant, judging the F35C aircraft – which is non-STOVL conventional carrier-launched – more suited to requirements.[100]

94 Bob Ainsworth, Minister of State (Armed Forces), House of Commons written answer, 9 October 2007 from the They Work for You website http://bit.ly/1Kqkwj [accessed 27.07.09]

95 The House of Commons website http://bit.ly/Iwe9G [accessed 26.08.09]

96 naval-technology.com (2009) 'Queen Elizabeth Class (CVF), Royal Navy Future Aircraft Carrier, United Kingdom'. Available at www.naval-technology.com/projects/cvf/

97 Examination of witnesses, 25 November 2008. Available at http://bit.ly/ifmSp

98 Defence Select Committee (2008) Defence –Seventh Special Report, 17 June. http://bit.ly/4g7FS

99 Navy Matters (2008) 'Joint Combat Aircraft', http://navy-matters.beedall.com/jca1-1.htm and http://navy-matters.beedall.com/jca1-2.htm. Updated 6 March 2008, accessed 21April 2009 [accessed 26.08.09]

100 http://navy-matters.beedall.com/jca1-1.htm [accessed 26.08.09]

'We expect programme development and procurement costs to increase substantially and schedule pressures to worsen.'

US Government Accountability Office report on F35s, March 2008

F35 COSTS

The UK agreed a fixed contribution to the US-led development programme. This means it has until now been insulated from a sizeable increase in the programme's estimated cost, which rose by nearly a third between 2001–06.[101] Nevertheless, the UK's F35 development bill – entailing both involvement in the US-led development programme and UK-specific work on adapting the aircraft for national requirements – has so far been kept within the 2001 estimate of just over £2bn. This would not have been the case if various UK-specific weapons and systems requirements had not been dropped.[102]

However, when the UK comes to buying the aircraft, it will not be protected from price hikes as it was during the fixed-contribution development phase, and the outlook on costs from the US is bleak.

According to the US Department of Defense (DOD) data reproduced in a March 2008 report by the US Government Accountability Office (GAO – equivalent to the UK's NAO), in October 2001 the estimated unit cost of each F35 was $69m in average procurement terms (ie excluding development costs). Since then, however, the estimate has rocketed, rising by December 2006 to $104m per aircraft – a price increase of over 50% in five years.[103]

Furthermore, the GAO report states that three US government defence agencies believe that the latest US programme cost estimate may still be understated by as much as $38bn – for reasons including over-optimistic assumptions and a failure to include all costs. This would imply a further cost increase of over $15m per US-procured aircraft, up to $119m per plane. The GAO itself notes other uncertainties and unfunded requirements which suggest that even these figures may drastically underestimate the shortfall. Moreover, it observes with alarm that, in spite of this dismal prognosis and of all the changes that have occurred since the start of the programme:

'DOD does not intend to accomplish another fully documented, independent total programme life-cycle cost estimate for another six years. Twelve years between high-fidelity estimates is not acceptable in our view, especially given the size of the JSF program, its importance to our allies' future force structures, the changes in cost and quantity in the intervening years, and the unreliability of the current estimate.'

In other words, the DOD's over-confidence about costs may result in the UK and other project partners receiving a nasty shock when it next revises its estimates. While it is impossible to confirm how closely the unit cost of aircraft purchased by the UK will match US aircraft (among other factors, it will presumably be at the mercy of exchange rate fluctuations) there are clearly strong grounds for suspecting that the UK government's £10bn procurement estimate will prove irresponsibly over-optimistic.

Bad news from the US is not just confined to aircraft acquisition costs. The 2008 GAO report already cited states that *'informed by more knowledge as the program progresses, DOD doubled its projection of JSF life-cycle operating and support costs compared to last year's estimate'*. While implications for the MOD's estimate of lifetime costs are not yet clear, it appears probable that they too will have to undergo a very substantial increase.

101 From $34.4bn to $44.2bn: Sullivan, M (2008) Joint Strike Fighter: Impact of Recent Decisions on Program Risks. Washington, DC: US Government Accountability Office. U.S. Government Accountability Office website http://bit.ly/16YXAh [accessed 26.08.09]

102 NAO (2008) Ministry of Defence Major Projects Report 2008: Project Summary Sheets. Report by the Comptroller and Auditor General. HC 64-II Session 2008-2009: 18 December 2008. National Audit office website http://bit.ly/16MEsM [accessed 26.08.09]

103 Sullivan M (2008) Joint Strike Fighter: Impact of Recent Decisions on Program Risks. Washington, DC: Government Accountability Office. US Government Accountability Office website http://bit.ly/16YXAh [accessed 26.08.09]

It seems unlikely that the UK government is unaware of these developments in the US, and yet, as already mentioned, it has continually given the same procurement estimate as it first gave in 2002. And as far as Greenpeace has been able to ascertain, it has not issued a revised estimate for in-service running costs since the same date. The UK government's indifferent attitude towards these serious budgetary changes may be encouraged by the NAO's slapdash forecasting in the annual MOD Major Project Reports – many cost elements for both supercarriers and aircraft are either restated year on year without question or merely represented by blanks.[104] This contrasts starkly with the GAO's critical scrutiny of US programme management. When put together with the recent official reluctance to stipulate the size of the projected order in even the vaguest terms, the government's stonewalling on costs appears to imply that the MOD may be intending to order far fewer aircraft than the 150 first envisaged.

As things stand, the UK could only afford 111 aircraft – 26% fewer than forecast – at the most recent US cost estimate of $119m per aircraft – allowing an exchange rate of £1 to $1.65 and considering that after development costs[105] there is £8.022bn left from the total acquisition estimate of £10bn. If the GAO's predictions of further cost increases prove correct, this number will drop further.

So, unless funds are diverted from elsewhere in the defence budget or the wider economy, the government may literally not be able to afford enough F35s for the supercarrier fleet and limited land bases to be operationally effective. And since the supercarriers' whole rationale will be to act as floating air bases, it is legitimate to ask why we are beginning to build these ships when we do not know if we can afford to equip them as required.

104 The latter presumably on grounds of 'commercial sensitivity', as noted with respect to the 2005 report in House of Commons Defence Committee Future Carrier and Joint Combat Aircraft Programmes: Second Report of Session 2005–06 (page 9). House of Commons website http://bit.ly/JTS4q [accessed 26.08.09]

105 NAO (2008) Ministry of Defence Major Projects Report 2008: Project Summary Sheets. Report by the Comptroller and Auditor General. HC 64-II Session 2008-2009: 18 December 2008. National Audit website http://bit.ly/16MEsM [accessed 26.08.09]

'We do not think the official JSF program cost estimate is reliable; [it] is not comprehensive, accurate, well documented, or credible'[106]

Michael Sullivan, Director Acquisition and Sourcing Management, US Government Accountability Office, 11 March 2008

INCREASING COSTS:
F35 COMBAT AIRCRAFT

OCT 01 $69M per aircraft

DEC 03 $82M per aircraft

DEC 05 $95M per aircraft

DEC 06 $104M per aircraft

MAR 08 $119M per aircraft

The US-led F35 combat aircraft costs have risen over 70% – $50m – per aircraft, since 2001. And despite the fact that the US is experiencing these price hikes, the UK – which was the first country to buy into the project – is still blindly quoting 2002 estimates and has not revised in-service running costs since the same date.

Cost increases are taken from Sullivan M (2008), Joint Strike Fighter: Impact of Recent Decisions on Program Risks. Washington DC: Government Accountability Office http://bit.ly/16YXAh

SUPERCARRIERS: WHAT IS HAPPENING NEXT?

SERVICE DELAYS

Both the aircraft supercarriers and the aircraft themselves have already suffered a catalogue of delays (see graphic on page 50) and more are on the horizon. When BAE and Thales were first announced as key contractors in 2003, the aircraft supercarriers were scheduled to enter service in 2012 and 2015.[106] This timescale stood until 2008, when, in quick succession, the service entry dates of the two ships were put back. In July 2008 the contract with the Aircraft Carrier Alliance was announced and the service entry dates shifted forward to 2014 and 2016 for each ship. Then just five months later it shifted forward again to 2015–16 and 2017–18.

EMPTY SUPERCARRIERS AND OBSOLETE AIRCRAFT IN OPERATION

The situation with the F35s is both similar and even more obscure. The F35 was selected as the UK's preferred Joint Combat Aircraft (JCA) in 2002. A few months later, it was expected to enter service by 2012, in line with the first supercarrier – with a latest acceptable service entry date of April 2014.[107] But by the end of 2005 the target in-service date had slipped to December 2014 as a result of the difficulties already mentioned.[108] In December 2008, it was admitted that the MOD will not commit to buying a given quantity of aircraft until the operational test and evaluation phase is completed in 2014.[109] Unsurprisingly, the UK's 2007 equipment plan (EP07) apparently changed the aircraft's target service entry date to 2017 at the earliest, which is around the time the second supercarrier is now expected to enter service.[110] Worse, the US GAO report referred to above predicts that the development schedule can be expected to slip even further, by between 12 and 27 months,[111] which would imply service entry as late as 2020.

This means that one or both of the supercarriers will now be in service without any of the aircraft they have been designed for – as the government has acknowledged.[112]

106 Adam Ingram, Minister of State (Armed Forces), parliamentary written answer, 16 September 2003. Available at http://bit.ly/XfzPk

107 NAO (2002) Ministry of Defence Major Projects Report 2002. Report by the Comptroller and Auditor General. http://bit.ly/kbr7o At this stage the carrier-borne F35 was to be considered as 'in service' when eight aircraft were embarked and at readiness to move within two to five days. The stipulation has since been reduced to six aircraft

108 Navy Matters (2008) 'Joint Combat Aircraft', http://navy-matters.beedall.com/jca1-1.htm and http://navy-matters.beedall.com/jca1-2.htm. Updated 6 March 2008, accessed 21April 2009

109 House of Commons website http://bit.ly/USilg [accessed 26.08.09] point 119

110 Navy Matters website http://bit.ly/nn5Bq [accessed 26.08.09]

111 Sullivan, M (2008) Joint Strike Fighter: Impact of Recent Decisions on Program Risks. Washington, DC: US Government Accountability Office. US Government Accountability Office website http://bit.ly/16YXAh [accessed 26.08.09]

112 Select Committee on Defence Minutes of Evidence Q162 and Q163, House of Commons website http://bit.ly/3HwaZb [accessed 26.08.09]

'I sadly prophesise that if HMS Queen Elizabeth or HMS Prince of Wales ever carry more than 18 F35Bs, that is because a US Marine Corps squadron has been embarked for an exercise.'

Navy Matters, October 2008

'The immediate questions for the F35 are: how much more will it cost and how many additional problems will compromise its already mediocre performance? We will only know when a complete and rigorous test schedule – not currently planned – is finished. The F35 is a bad deal that shows every sign of turning into a disaster.'

Pierre M. Sprey, US aircraft designer and Winslow T. Wheeler, Centre for Defense Information, Washington DC, Jane's Defence Weekly, 10 September 2008

SLIDING TIMESCALES: SUPERCARRIERS

1998

Initial gate approval:[A] the supercarrier project proposed in 1998 Strategic Defence Review[B] receives the go-ahead for the first stage of the project and the release of initial funding.

2003

The schedule and contractors are confirmed:[C] the MOD, BAE Thales UK are granted the supercarrier project and in-service dates for each supercarrier are targeted.

SERVICE ENTRY DATES:

2012 & 2015

JUL 2008

A year after the main gate approval, contracts with BAE systems and Thales UK are signed[D] and service entry dates rescheduled.

SERVICE ENTRY DATES:

2014 & 2016

SLIDING TIMESCALES: AIRCRAFT

1995

UK government buys into the F35 project, committing funds to the Concept Demonstration[F] phase – and an in-service date is estimated.[G]

SERVICE ENTRY DATE:

2010

2001

UK government signs a Memorandum of Understanding to formalise participation in the F35 System Development and Demonstration (SDD) phase[H] – in-service dates are pushed back.[I]

SERVICE ENTRY DATE:

2012

2004

Following the 2004 MOD Major Projects Report giving a target service entry date of 2012,[J] the MOD stops publishing service entry dates.

SERVICE ENTRY DATE:

????

DEC 2008

Defence Secretary John Hutton announces that both supercarriers will be delayed[E] a further one to two years, with the first due in service 2015–16 and the second 2017–18.

SERVICE ENTRY DATES:
2015–18

2007

The UK's equipment plan (EP07) delays the aircraft's target entry date.[K]

SERVICE ENTRY DATE:
2017

2008

US GAO report[L] indicates that service entry date will slip further.

SERVICE ENTRY DATE:
2019–20

2009

In January, the UK government states: 'We will not be setting in-service dates for the Joint Combat Aircraft (JCA) until we take the main investment decision and we will take that decision when the project is fully mature.'[M]

SERVICE ENTRY DATE:
????

A Hansard: http://bit.ly/6aNZI [accessed 10.08.09]

B MOD full report: http://bit.ly/N8J6z [accessed 10.08.09]

C Parliamentary written answer from Adam Ingram, They work for you website: http://bit.ly/FC4y1 [accessed 10.08.09]

D Naval Technology website article: http://bit.ly/2MFQUo [accessed 10.08.09]

E BBC website: http://bit.ly/1lGG1 [accessed 10.08.09]

F MOD projects report: http://bit.ly/18pHol [accessed 10.08.09]

G Hansard: http://bit.ly/grOHH [accessed 10.08.09]

H NAO (2002) Ministry of Defence Major Projects Report 2002 by the Comptroller and Auditor General: http://bit.ly/YHP2A [accessed 10.08.09]

I *ibid*

J *ibid*

K Navy Matters website: http://bit.ly/nn5Bq [accessed 10.08.09]

L Sullivan M (2008) 'Joint Strike Fighter: Impact of Recent Decisions on Program Risks'. Washington, DC: Government Accountability Office: http://bit.ly/16YXAh [accessed 13.08.09]

M Parliamentary written answer from Quentin Davies, They work for you website: http://bit.ly/pUU8q [accessed 10.08.09]

MAKESHIFT DEFENCE

A wider question that also needs to be asked is: to what extent can two supercarriers that are smaller than originally intended, equipped with perhaps half the aircraft they were designed to carry, fulfil anything approaching the supposedly vital role for which they were commissioned at such expense? And did the UK really need them in the first place?

IRRATIONAL SPENDING

In spite of all the delays and unanswered questions, spending on both supercarriers and F35 aircraft continues. As already mentioned, the contracts recently signed for the aircraft supercarriers look likely to be renegotiated with a further increase in cost, while nearly half of the UK's proposed £2bn outlay on the F35's development remained to be spent as of April 2008.[113]

It is not too late to stand back. With a firm production order for the F35 still five years away by the government's own admission, and the supercarrier cost negotiations as yet uncompleted, there is a welcome opportunity for reappraisal of the whole programme. It seems clear that as things stand the spiralling costs of the supercarriers and the F35s will either take the supercarrier programme much further over budget than it has already gone, or put the government in a position where it cannot afford to buy enough aircraft. This will leave the UK with two giant floating air bases that cannot fulfil the missions for which they were intended. Either eventuality seems a wholly unjustifiable use of public funds at a time when public spending will be reined in – not to mention controversy over inadequate equipment and resources on the ground in existing combat areas.

113 NAO (2008) Ministry of Defence Major Projects Report 2008: Project Summary Sheets. Report by the Comptroller and Auditor General. HC 64-II Session 2008-2009: 18 December 2008. National Audit website http://bit.ly/16MEsM [accessed 26.08.09]

'The aircraft-carrier and Trident-replacement decisions ensure that Britain will be capable of expeditionary warfare but not very much more. It is highly questionable whether this combination will be sufficient to address Britain's real security needs, which are being increasingly influenced (even reshaped) by global environmental, social and economic problems.'

Professor Paul Rogers, University of Bradford, opendemocracy.org, 26 August 2007

CONCLUSION: WHAT NOW?

TIME FOR PERSPECTIVE

This report details how political decisions to commit funds to both Trident replacement and the aircraft supercarrier project are due to be made in the near future. These decisions could, over the long term, commit a massive £130bn of the UK's defence budget. These decisions will have a profound effect on which military, foreign policy and humanitarian missions the UK can undertake in the future. Conversely, in an era of constrained spending, these decisions will dictate which missions the UK will not be equipped for.

Before this money is committed a real debate must be had. Greenpeace believes that this debate needs to go far wider than a conventional defence review. It needs to consider what, in a future marked by climate change and diminishing resources, the real threats to our security are and how they are best addressed.

It needs to ask how we ensure the security of our basic needs – such as water, food, shelter and energy – and how we respond to the mass displacement of populations, as climate change makes areas of the planet uninhabitable through drought, flooding or famine.

This debate needs to ask whether the way to prevent the spread of nuclear weapons globally is to commit to building more, or to commit to an international plan to eliminate them and to control the technology and materials for making them.

The government needs to ask whether global security can really be achieved by a Cold War-style projection of so-called 'hard power', or whether this kind of overbearing military practice is increasingly counterproductive in today's interconnected world. And it needs to address the role of 'soft power', such as diplomacy, strategic communications, foreign assistance, civic action and economic reconstruction and development.

The UK needs a new era of transparency. The government must come clean about how it intends to spend its citizens' money without relying on the sharp accounting practices and complex language that have concealed the real costs of state-funded projects in the past.

This report aims to help spark this move towards a new transparency and to start the public debate about what real security means in today's world.

'It is difficult to see how the United Kingdom can exert any leadership and influence on this issue if we insist on a costly successor to Trident that would not only preserve our own nuclear-power status well into the second half of this century but might actively encourage others to believe that nuclear weapons were still, somehow, vital to the secure defence of self-respecting nations.' [114]

Field Marshal Lord Bramall, a former Chief of the Defence Staff; General Lord Ramsbotham, a former Adjutant-General; and General Sir Hugh Beach, former Master General of the Ordnance oppose Trident replacement, letter to the Times, 16 January 2009

114 Times website http://bit.ly/fNRxW [accessed 26.08.09]

GREENPEACE IS CALLING FOR THIS GOVERNMENT TO:

- suspend any further funding of the Trident replacement and aircraft supercarrier programmes, including any additional investment in replacement submarine designs, and any investment in AWE facilities relevant to the development of new warheads.
- release a detailed breakdown of all projected procurement and in-service running costs of the Trident replacement and aircraft supercarrier programmes, including:
  - the costs associated with providing AWE with the technical capacity to design and manufacture a new warhead
  - an updated cost estimate for the F35/JCA planes that includes the number of aircraft that the UK intends to purchase for both the supercarriers and linked land bases, and
  - an updated cost estimate for the supercarriers.
- actively promote the aims of both the Nuclear Non-Proliferation Treaty and the Global Zero initiative.

GREENPEACE IS CALLING ON THE INCOMING GOVERNMENT FOLLOWING THE NEXT GENERAL ELECTION TO:

conduct a full foreign policy and strategic defence review that:

- re-examines the rationale for both the supercarrier project and Trident replacement and considers a range of options for Britain's future nuclear weapons strategy including non-replacement and the concept of extending the life of existing submarines by taking them off continual patrol and storing their nuclear warheads in secure onshore sites
- considers both projects in the light of alternative uses for equivalent defence (or other) expenditure
- thoroughly examines the implications of climate change for global security issues
- creates a transparent accounting procedure for all military expenditure, and
- actively promotes the aims of both the Nuclear Non-Proliferation Treaty and the Global Zero initiative.

NOTES:

NOTES:

'It is nice if we can afford lots of tanks, ships and aircraft, but we can't. We have to make choices in those areas in order to preserve our ability to generally transform the Armed Forces, not to just preserve what we have but to be able to move from one era to another. We haven't done that.'

Professor Michael Clarke, Chairman of RUSI (Royal United Services Institute), Defence Management Journal, 3 July 2009

Greenpeace is committed to eliminating all weapons of mass destruction and tackling the root causes of global insecurity.

We champion nonviolence as a force for positive change in the world.

We promote environmentally responsible and socially just development. We advocate policies that ensure that all the world's people have access to the basic securities of life so that injustices that lead to conflict cannot take hold.

GREENPEACE

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