The UK's Nuclear Weapons

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Campaign for Nuclear Disarmament

Global Network Against Weapons and Nuclear Power in Space

thanks to:

John Ainslie, Scottish CND

Peter Burt, Nuclear Information Service

Peace and Planet Conference

New York

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Current Status – Nuclear Weapons

- Sept 2010: UK has < 225 Trident nuclear warheads to be reduced to ~180 by 2020s
- UK warhead contains a mixture of UK and US elements
- 3 components of the US W76 warhead purchased from US:
  - Arming, Fuzing and Firing System;
  - Gas Transfer System and
  - Neutron Generator
- Yield similar to the W76 (~100 kilotons).

Current Status – Delivery System

- Only delivery system is the US-built Trident D5 missile.
- 4 Vanguard class submarines
- 3 of these are armed with Trident missiles - the 4th is in refit
- Each submarine carries 40 nuclear warheads deployed on 8 missiles.
- There are periods, following the end of a long refit, when only two submarines are armed.

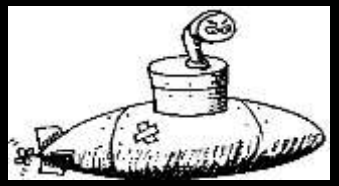
Current Status – Delivery System

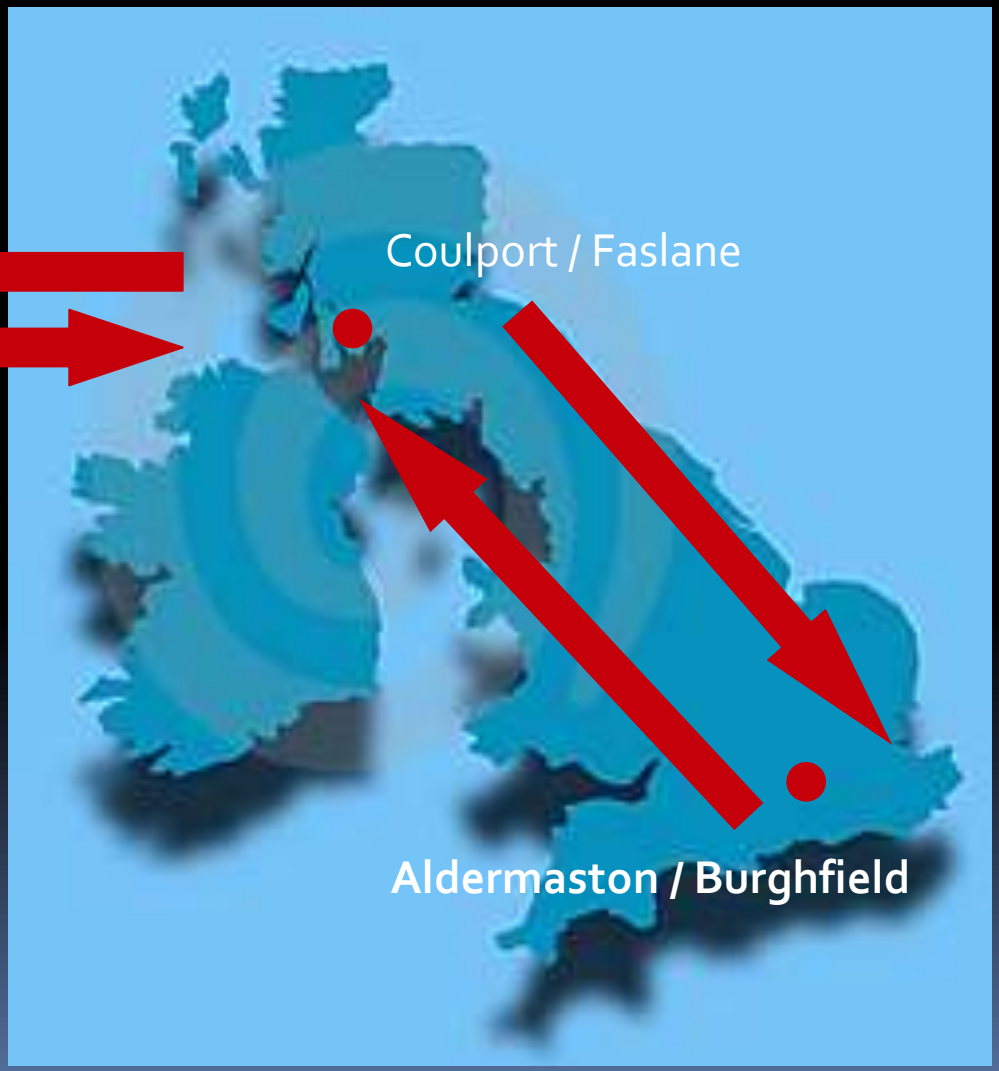
- Vanguard class submarines operate from Faslane Naval Base, 25 miles from Glasgow, Scotland's largest city.
- Submarines are built at Barrow in Furness.
- Fuel cores for naval reactors manufactured by Rolls Royce in Derby.
- Normally one Vanguard class submarine in refit at Devonport dockyard.

Atomic Weapons Establishment (AWE)

- Established 1987, privatised 1993.
- Responsible for researching, designing, manufacturing, and decommissioning the UK's nuclear weapons.
- Two sites:
  - Aldermaston -production of plutonium, HEU, & Berylium and research into warhead design
  - Burghfield - warhead assembly and disassembly
- 4,700 permanent staff and 1,000 contractors.
- £1 billion annual budget.

The Nuclear Warhead Cycle

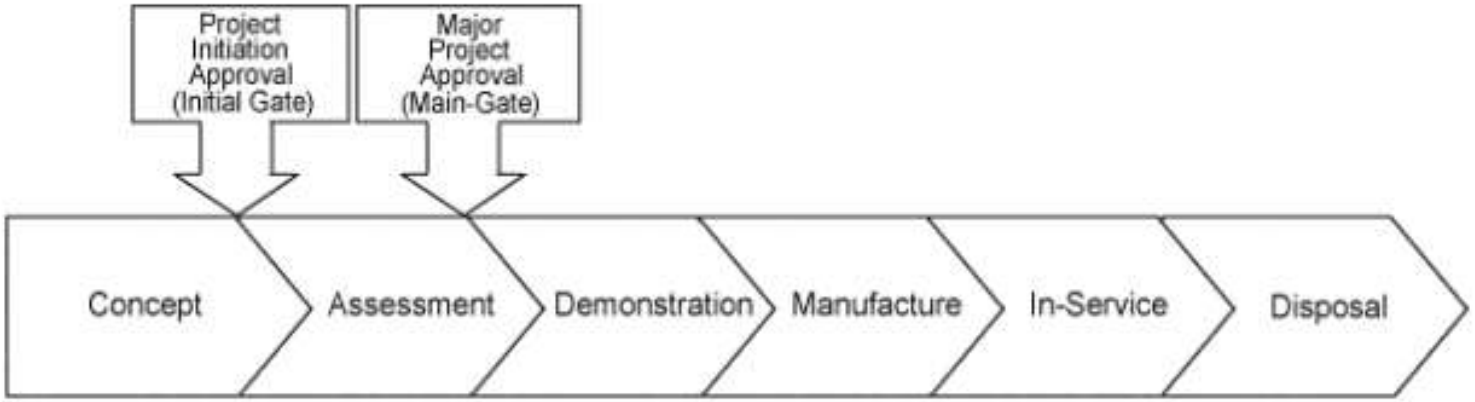




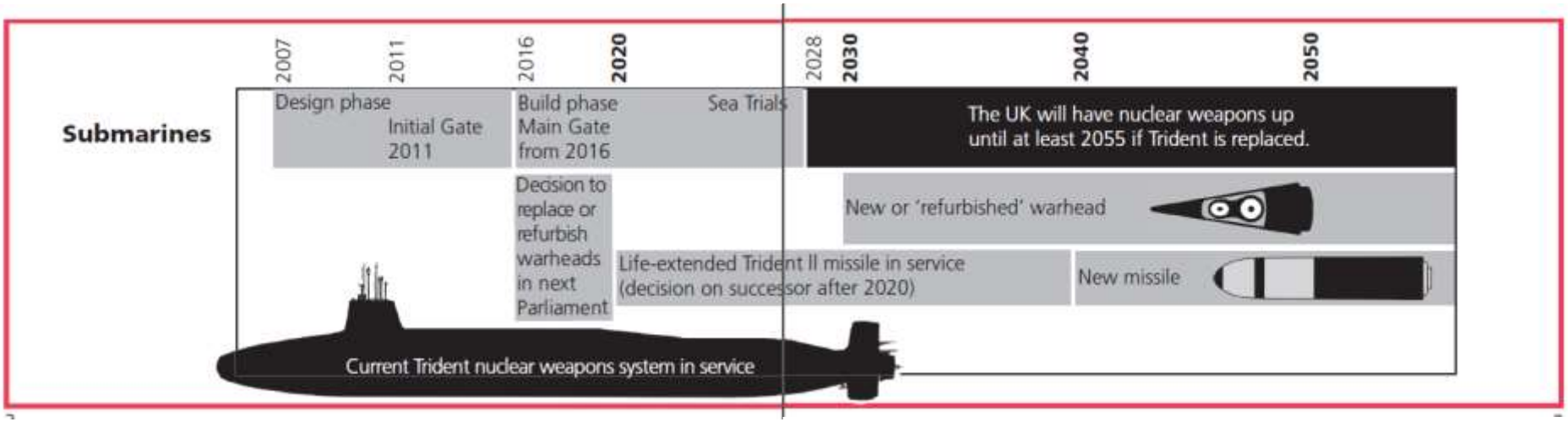
Current work at AWE

- Main focus is on Trident warhead.
- Manufactured late 1990s – early 2000s: currently undergoing maintenance and upgrade.
- 45 Trident warheads to be decommissioned by 2025.
- Increasing amount of work on disarmament verification and nuclear security.
- Extensive decommissioning programme for older buildings.

Trident Replacement



Source: *UK Defence Statistics 2009*, Ministry of Defence, London, chapter 1, table 1.16 "Major Equipment Projects"



Democratic Process?

Liam Fox risks Lib-Dem backlash with steel order for new nuclear sub

Deterrent: the spending decision on replacing Trident is not due until 2016

Nicholas Cecil, Chief Political Correspondent
17 Feb 2011

Recommend

Liam Fox is to order the steel for the first new nuclear deterrent submarine - despite the Liberal Democrats winning a delay to the formal decision on replacing Trident until after the next election.

The Defence Secretary insisted that the super-strength metal for the submarine hull had to be ordered in the next few years to ensure it was ready in time to continue as Britain's nuclear deterrent.

But the revelation that the metal is to be bought before the main spending decision on replacing Trident, due in 2016, risked a backlash from Liberal Democrat MPs. Carshalton MP Tom Brake said: "It's a false start, he's jumped the gun. Clearly there is a commitment on behalf of the Government to assess the value for money of the Trident replacement programme. This has got to happen before components of the system are being purchased."

Former Lib-Dem leader Sir Menzies Campbell said: "Although there is a cost involved in ordering the steel, this is by no means a green flag for Trident. The Ministry of Defence budget is increasingly under siege and now that Trident has to come from its core funding, other urgent and important programmes are having to be looked at again."

But Tory MPs hailed Mr Fox for his tough stance on replacing the nuclear deterrent. "I'm delighted that the Secretary of State is showing his mettle," said former Army officer Patrick Mercer MP. "This is a clear indication that he will not be distracted from his course from those who would be happy to leave the nation open to attack."

Lib-Dem leader Nick Clegg persuaded David Cameron, who backs a full replacement of the continuous at-sea nuclear deterrent, to delay the decision on going ahead with its replacement until after the election, due in 2015.

But Mr Fox has now admitted to Labour Left-winger Jeremy Corbyn that the steel will be ordered before then as part of the initial business case.

MoD plans to spend £4.2bn on replacing Trident before parliament gives go-ahead

Rob Edwards

Sunday 8 February 2015

The Ministry of Defence (MoD) is planning to spend £4.2 billion on replacing the Trident nuclear weapons system before the UK parliament has given it the go-ahead, according to a report from the government's National Audit Office (NAO).

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MoD spends £2bn on nuclear weapons ahead of Trident renewal decision

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New Trident spend to near £4bn by 2016

20 December 2011

ll have spent £3.9bn on the programme to replace Britain's nuclear deterrent
it makes the final 'main gate' decision on renewal in 2016, it has been

ns from Labour MP and Campaign for Nuclear Disarmament vice chair
ho described Trident as a "vanity project", defence equipment minister Peter
t that the money was preserving the option of renewal for the next

nd £3.9bn on the successor submarine programme by the main gate
016. We have deferred the decision on the future warhead until the next
uff.

around £900m a year at AWE—the Atomic Weapons Establishment—on
and running costs to ensure that we can sustain the capabilities to
nt stockpile. As a consequence of this sustainment, we will also have the
n and produce a new warhead, should that be required.

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19 May 2011 Last updated at 07:55

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Work on Trident nuclear renewal gets go ahead

The defence secretary has given the go-ahead for initial work to begin on the replacement of Britain's Trident nuclear weapons system.

Liam Fox approved the £3bn first design stage for replacement submarines, saying Trident was the "ultimate guarantee of national security".

The coalition has delayed the final decision until after the next election amid Lib Dem concerns over its cost.

The renewal of Trident has major financial and political implications

The Telegraph

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Trident spending to account for one third of defence budget within a decade

Spending on the successor to Britain's Trident nuclear deterrent will take up to a third of the defence budget within the next decade, defence experts are warning.

Trident is becoming a significant par of defence budget – causing even some conservatives to favour cutting nuclear weapons in favour of conventional weapons.

Modernisation

- Dec 2006 - President Bush wrote to Prime Minister Blair, agreeing to support the British nuclear weapon programme.
- Bush referred to "the steps outlined in your letter to maintain and modernize the U.K.'s capability in this area for the longer term".

Warhead Modification (Mk4A)

- Dec 2014 update to parliament on the future of the nuclear deterrent said "the current warhead … is planned to remain in service into the 2040s".
- Extending the life of the current warhead by around 20yrs requires a significant refurbishment project.
- Work carried out under the "Nuclear Warhead Capability Sustainment Programme".

Nuclear Weapons Capability Sustainment Project

- Inception in November 2002 - but not announced until July 2005.
- Life extension and upgrade of warheads to W-76 Mk4A design: wider range of targetting options.
- Allow joint research work with USA to continue and ensure AWE is able to develop and build a new warhead if asked to.
- Requires new facilities at AWE.
- Recruitment and training of scientists to retain key skills.

Warhead Modification (Mk4A)

- UK warhead modification similar to US Mk4A / W76-1 upgrade - Lockheed Martin in California is planning, coordinating and executing the development and production of "UK Trident Mk4A Reentry Systems as part of the UK Trident Weapon System Life Extension program".
- Common component of US & UK programs is a new US Mk4A Arming, Fuzing and Firing (AF&F) system .

Warhead Modification (Mk4A)

- W76 Mk4A AF&F developed so warheads on D5 missiles would be effective against hardened targets.
- The draft military characteristics for Mk4A include "near surface burst," which was not an option for Mk4.
- 2011: Sandia National Laboratory conducted "first W76-1 UK trials test" at the Weapons Evaluation and Test Laboratory (WETL) - "provided qualification data critical to the UK implementation of the W76-1."
- WETL simulates the trajectory of the W76/Mk4 reentry-vehicle.

New Warhead Development

- 2010: Defence Minister Liam Fox, who said "We don`t have to think about new warheads until 2019".
- 2014 Parliament update: "a decision on whether to replace the existing warhead will not be required until the next Parliament" (i.e. 2015 – 2020).
- Would take 17 years to develop a new warhead –(~2036).
- Signs are that AWE is not just sustaining the capabilities for warhead development, but also developing designs for a new successor warhead.
- MoD has set up a Warhead Pre-Concepts Working Group.
- AWE, US Air Force, and US Navy initiative is developing an AF&F for a successor warhead.
- AWE is developing new GTS for a successor warhead.

Missile System

- The US Strategic Systems Program (SSP) is extending the life of the D5 Trident weapon system and updating all subsystems: launcher, navigation, fire control, guidance, missile, and re-entry.
- 2006 Dec: President Bush wrote to Prime Minister Blair, saying, "We will work to ensure that the necessary components of the overall system are made available to the United Kingdom to support life-extended D5 missiles."
- 2014 Nov: US contract refers to the "UK VANGUARD Class SSBN Work Planning Document for Trident II SWS Modernization".
- D5LE will be more accurate and more rapidly re-targetable.

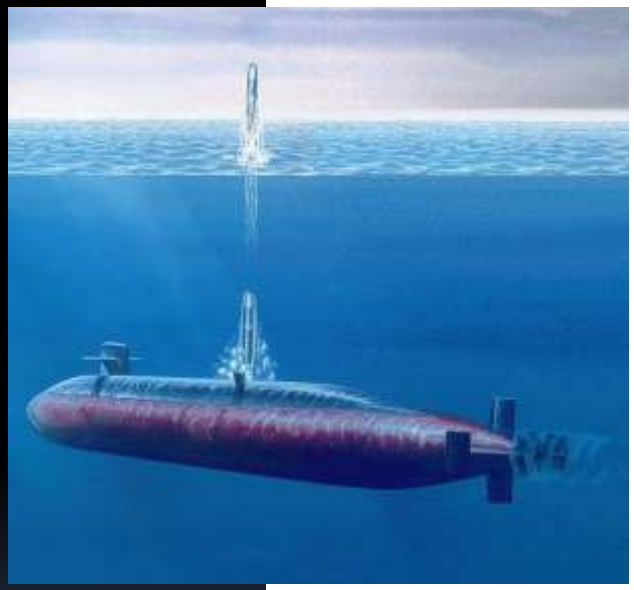
New Missile System

- UK successor submarine is to remain in service until the 2060s - the US Ohio replacement will be operational until the 2080s.
- The Life Extension programme for D5 will only sustain this missile until the early 2040s.
- UK government has acknowledged that "investment in a replacement ballistic missile would eventually be needed."

Submarine

- 2007: Approval for initial work on a new nuclear-armed submarine
- Now: £4,181m being spent on new submarines prior to Main Gate decision
- Successor powered by new PWR3 reactor – design depends on "a high level of technology transfer from the US"
- First PWR3 reactor due to be built by Rolls Royce by 2023.
- US & UK Navies joint research program to make detection more difficult - an enhancement of capability.

Submarine



- 2014 Oct: General Dynamics Electric Boat awarded $59 million for 12 missile tubes for first successor class submarine.
- 2010 Oct: British ambassador for multilateral arms control and disarmament told the UN that UK would "configure the next generation of submarines with only 8 operational missile tubes".
- Common Missile Compartment (CMC) is being developed in the US - some of the work is specifically for the UK successor submarine.
- Decision on 3 or 4 submarines will be taken in 2016.

US-UK Mutual Defence Agreement

- MDA treaty facilitates the development of Britain's nuclear weapon technology and support building a replacement for Trident.
- 2014: Renewed without debate
- UK relies on the US for many aspects of Trident.
- British submarines must regularly visit the US base in Kings Bay, Georgia, for the maintenance and replacement of these missiles.
- UK government recently paid the US £250 million to participate in a missile life extension programme.
- UK participates in numerous exchange visits with staff from the US nuclear weapons laboratories.
- Also participates with the US in 'sub-critical' nuclear tests (tests which fall just short of releasing a nuclear explosion).

AWE Expansion

- Major new build / refurbishment programme under way at AWE.
- New warhead assembly building, uranium facility, and explosives facility under construction.
- 'Preliminary studies' on new warhead under way.
- Joint research with US and France.

Projects Already Commenced: ‘Orion’ Nuclear Test Laser

Fully operational in April 2013

Projects Already Commenced: New IT Building

Projects Already Commenced: ‘Gemini’ Office Complex

Planning Permission Granted: ‘Mensa’ Assembly/Disassembly Facility

A new facility for nuclear warheads assembly and disassembly costing around £700 million. This has four assembly chambers each of which is surrounded by double walls and is due to be completed in 2015.

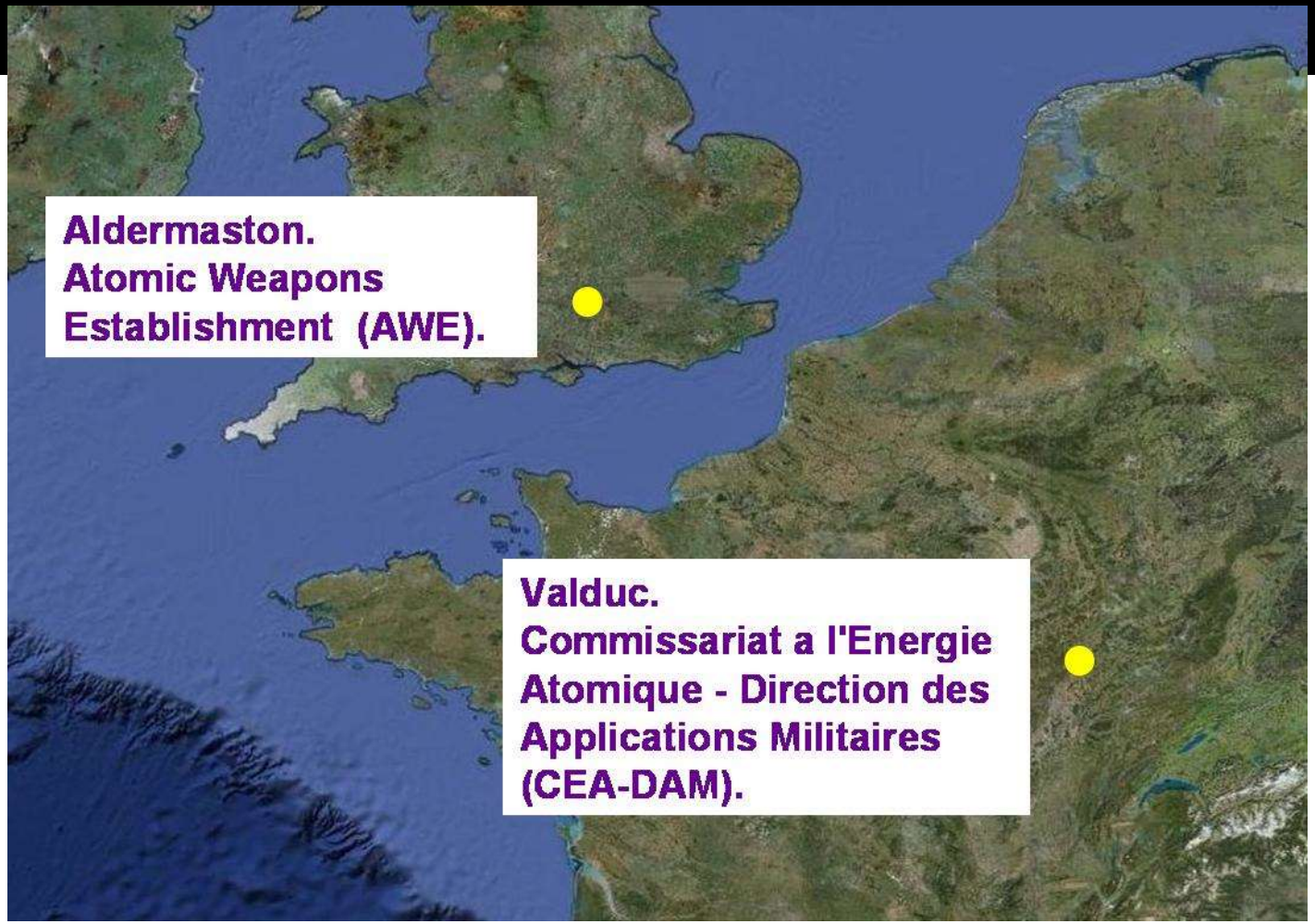
Planning Permission Granted: ‘Pegasus’ Enriched Uranium Facility

A top-secret £634 million project. A FOI request to the Office of Nuclear Regulation revealed that "AWE has placed the Pegasus project on-hold"

France – UK Summit
2 November 2010

- Declaration on Defence and Security Co-operation.
- 50 year Defence and Security Co-operation Treaty.
- Subordinate treaty on development of joint radiographic / hydrodynamic facilities for modelling performance of nuclear weapons.

Teutates project



Teutates project - France

CEA-DAM Valduc:

- **EPURE (Experimentations de Physique Utilisant la Radiographie Éclair).**
- **Radiographic / hydrodynamic facilities for experiments on warhead materials and parts.**
- **Separate areas for joint and national use.**

Teutates project - England

AWE Aldermaston:

- **Technology Development Centre.**
- **Development of radiographic analytical equipment for use in EPURE.**
- **Shared facility between both nations.**

Contradictions: Non-Proliferation Treaty

Article VI: obliges Parties to "pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament".

UK's modernization plans are closely bound to its special nuclear relationship with the US - transfer of nuclear weapon design information, warhead components, and fissile material from the US to the UK is contrary to spirit of the NPT

50 year period of the UK - France hydrodynamics Treaty also inconsistent with NPT.

Contradictions: International Law

Nov 2006: Sands and Law advising on the legality of the maintenance and replacement of the UK Trident system:

If the position of the UK is that a nuclear deterrent remains necessary whilst there is the unascertainable risk of a future threat developing, this amounts to a de facto acceptance that the UK will never fully disarm. In our opinion, this can only negate the good faith with which the UK is required to negotiate [to achieve nuclear disarmament under Article VI of the NPT].

The upgrades of Trident would increase the circumstances in which the UK's nuclear weapons would be used - contrary to the obligation to pursue a diminishing role for nuclear weapons, as set out at the 2000 NPT Review Conference and reaffirmed at the 2010 NPT Review Conference.

Contradictions: International Law

Lord Murray, former senior government law officer in Scotland, has said that the deployment of Trident on continuous patrol, in the absence of an imminent danger to Britain, could be seen as

"a continuing threat of unrestricted use against others" and therefore contrary to international law.

He also questioned whether the upgrading of Trident can be reconciled with the UK's obligation to pursue negotiations on disarmament in good faith.

Contradictions: Test Ban Treaty

Preamble recognises the disarmament value of "constraining the development and qualitative improvement of nuclear weapons and ending the development of advanced types of nuclear weapons".

2010 NPT Final Document reaffirms this and calls for "all States to refrain from any action which would defeat the object and purpose of the Comprehensive Nuclear-Test-Ban Treaty pending its entry into force.

Conclusions

- Currently Trident not included in the Strategic and Security Defence Review.
- Trident replacement will take up ~1/3rd of Defence Budget.
- £100 billion cost of replacing Trident is unacceptable – especially at a 'time of austerity' when there are devastating cuts being made in health, welfare and education spending.
- The US and French collaborations are against the spirit (at least) of the NPT and set to extend UK nukes for 40 years or more.