

# United Kingdom

Date of first nuclear explosion- 3 October 1952

## 1. Amount, Location, and Operational Plan of Nuclear Weapons

Weapon System	No. Deployed	Range (km)	Warheads x Yield (kt)	Warheads in Stockpile
D-5 Trident II* (SLBM)	48	>7,400	1-3 x 100	160**

\*Only 1 boat is on patrol at any time, with no more than 48 warheads.

\*\* Fewer than 160 warheads are operationally available, up to 144 to arm 48 missiles on 3 of 4 SSBNs. More warheads may be held in reserve, possibly another 40, or enough to arm one submarine.

Although the exact type is unknown, the warhead arming the British Trident missiles is thought to be a close variant of the US W76 warhead.

<http://first.sipri.org/index.php>; and Robert S. Norris and Hans M. Kristenson, "British Nuclear Forces, 2005" from *NRDC: Nuclear Notebook*, in *Bulletin of the Atomic Scientists*, November/December 2005, 61(6), pp 77-79.

The US also maintains 110 tactical nuclear weapons at RAF Lakenheath. Kristensen, Hans. "US Nuclear Weapons in Europe: A Review of Post-Cold War Policy, Force Levels, and War Planning," Natural Resources Defense Council, 2005. <http://www.nrdc.org/nuclear/euro/euro.pdf>

### Deployment/Storage Sites

Coulport- underground warhead storage facility

Faslane- operational ballistic missile submarine base

### Production Sites

Aldermaston- primary nuclear weapon research, design, and production site

Burghfield- nuclear weapon component production, and final assembly and disassembly site

Cardiff- nuclear weapon component production

Sellafield- plutonium production site

Chapelcross- tritium production facility

<http://nuclearweaponarchive.org/Uk/UKFacility.html>

### The Role of Nuclear Weapons in National Security Strategy

In its December 2006 White Paper, *The Future of the United Kingdom's Nuclear Deterrent*, the United Kingdom claimed that the current global context does not justify complete British nuclear disarmament because "significant nuclear arsenals remain, some of which are being modernised and expanded; and the number of states possessing nuclear weapons has continued to grow, as demonstrated most recently by North Korea's attempted nuclear test in October this year." Although it acknowledged that there was no current threat that warranted nuclear weapons, it claimed that the only way to deter undetermined future threats was to retain nuclear weapons.

In that White Paper, the UK outlined the following "five enduring principles [that] underpin the UK's approach to deterrence:"

- a focus on preventing nuclear attack;
- retention of the minimum amount of destructive power required to achieve deterrence objectives;
- deliberate ambiguity about precisely when, how and at what scale the UK would contemplate using nuclear weapons;
- support for the Euro-Atlantic area through NATO; and

- retention of an independent nuclear deterrent, with an independent decision-making center reinforces that of allies.

Also in the White Paper, the UK said, "We would only consider using nuclear weapons in self-defence (including the defence of our NATO allies), and even then only in extreme circumstances."

[http://www.mod.uk/NR/rdonlyres/AC00DD79-76D6-4FE3-91A1-6A56B03C092F/0/DefenceWhitePaper2006\\_Cm6994.pdf](http://www.mod.uk/NR/rdonlyres/AC00DD79-76D6-4FE3-91A1-6A56B03C092F/0/DefenceWhitePaper2006_Cm6994.pdf)

British national security is based primarily on the Strategic Defence Review (SDR), originally published in 1998, and reaffirmed and updated with "A New Chapter" in 2002. The SDR defines deterrence not "on the size of other nation's arsenals but on the minimum necessary to deter any threat to our vital interests." Furthermore, the SDR states, "We have concluded that we can safely make further significant reductions from Cold War levels, both in the number of weapons and in our day-to-day operating posture."

Under the SDR, only one SSBN is on patrol at any time, carrying a reduced load of 48 warheads-half the Conservative Government's announced ceiling of 96.

The submarines on patrol are at a reduced alert state and carry out a range of secondary tasks. The missiles are detargeted, and after notice the SSBN is capable of firing its missiles within several days rather than within several minutes, as they were during the Cold War.

UK is also a member of the NATO Strategic Concept, unveiled in April 1999. NATO affirmed its intention to maintain nuclear forces for the indefinite future.

## **2. Compliance with Article VI of NPT**

### **Nuclear Weapons Modernization/Vertical Proliferation**

On 14 March 2007, the British House of Commons approved Prime Minister Tony Blair's plan to renew Trident nuclear submarines. When faced with a decision between walking a path towards complete nuclear disarmament and a path towards indefinite retention of nuclear weapons, the UK chose the path towards indefinite retention. The UK will spend more than £1 billion over the next three years on upgrading Aldermaston and Burghfield. Aldermaston is also recruiting hundreds of new nuclear scientists, engineers, and support staff with expertise clearly applicable to designing new nuclear weapons. The Trident replacement system itself will cost anywhere from £25-75 billion to produce, maintain, and operate over the next several decades.

The decision was taken with the goal of extending the UK's Trident nuclear weapons system until 2055. The UK will still need to take decisions on the design of the system and contracts, and will also have to decide to renew the D-5 missile and its accompanying warhead in order to retain a nuclear weapons capability.

### **Nuclear Weapons Reductions**

Since dismantling the last Chevaline warhead in 2002, the UK has not undertaken any further cuts to their arsenal. According to the December 2006 White Paper, the UK has decided to further reduce its arsenal to less than 160 operationally available warheads, and a corresponding 20 percent reduction in its overall stockpile, but these cuts have yet to begin.

The SDR holds UK's nuclear weapons arsenal at fewer than 200 operationally available warheads.

### **Program Truncations**

The SDR calls for the purchase of 58 rather than 65 Trident II D-5 missiles from the United States. Since then, the UK decided not to purchase another seven missiles, which, in addition to several test-firings, leave the UK with 50 Trident II D-5 missiles.

## Nuclear Systems Retired

After the last WE177 warhead was retired, only Trident II warheads remain in the UK arsenal. The UK has no tactical nuclear capabilities as of 1999.

### 3. Location and Capability of Nuclear Facilities

#### Power Reactors

Operational: 19  
Shut down: 26  
Decommissioned: 0  
Planned: 0  
<http://www.iaea.or.at/programmes/a2/>

#### Research Reactors

Operational: 3  
Shut down: 6  
Decommissioned: 27  
Planned: 0  
<http://www.iaea.or.at/worldatom/rddb/>

Details on the decommissioning process can be found at: [http://www.ukaea.org.uk/sites/dounreay\\_site.htm](http://www.ukaea.org.uk/sites/dounreay_site.htm)

#### Uranium Mines- 0

#### Uranium Enrichment Facilities

Drigg, Cumbria (part of the Sellafield complex);  
BNFL Springfields facility, near Preston (conversion and fuel fabrication)  
URENCO Capenhurst uranium processing complex (enrichment)  
<http://www.wise-uranium.org/epeur.html#UK>

#### Reprocessing Facilities

Sellafield is one of the largest commercial nuclear sites, with facilities for waste management, reprocessing, recycling, MOX fuel fabrication, decommissioning, and waste storage.

### 4. Fissile Material Holdings

#### Military Stocks of Fissile Materials

Plutonium: 3.2 tons  
HEU: 21.9 tons

#### Declared Excess

Plutonium: 4.4 tons  
HEU: 0  
[http://www.isis-online.org/global\\_stocks/end2003/military\\_pu.pdf](http://www.isis-online.org/global_stocks/end2003/military_pu.pdf) (revised June 30, 2005)  
[http://www.isis-online.org/global\\_stocks/end2003/military\\_excess\\_heu.pdf](http://www.isis-online.org/global_stocks/end2003/military_excess_heu.pdf) (revised June 30, 2005)

**Unseparated Civil Plutonium:** 18.5 - 24.6 tons

**Separated Civil Plutonium:** 74.6 tons (96.2 tons in-country, including declared excess + 0.9 tons in other countries - 22.5 tons foreign-owned)

Estimated by 2010: 90 tons nationally-owned

Estimated by 2015: 92 tons nationally-owned

Estimated by 2020: 92 tons nationally-owned

[http://www.isis-online.org/global\\_stocks/end2003/plutonium\\_watch2005.pdf](http://www.isis-online.org/global_stocks/end2003/plutonium_watch2005.pdf) (revised August, 2005)

**Civil HEU:** 1.5 tons

[http://www.isis-online.org/global\\_stocks/end2003/civil\\_heu\\_watch2005.pdf](http://www.isis-online.org/global_stocks/end2003/civil_heu_watch2005.pdf) (revised August, 2005)

#### Radioactive Waste Management

*Low-level waste:* Low-level waste is sent to the disposal facility at Drigg. Here, LLW is usually subject

to high force compaction and cement grouting in modified ISO freight containers prior to disposal in engineered concrete vaults. The existing site will be full in 2050. Future low level decommissioning wastes may be buried near the sites of production.

Dounreay LLW is stored on site and options are being considered for managing future arisings from decommissioning the site. At Dounreay, a new Waste, Receipt, Characterisation and Supercompaction (WRACS) plant will manage solid low-level waste.

Very LLW, a sub-category of LLW, is currently disposed of in landfill sites, usually near the sites where it was produced.

*Intermediate-level waste:* ILW is stored at many sites across the UK where it was produced, awaiting a policy on long-term management. ILW is conditioned for long-term storage. A new ILW Vault Store is being commissioned at Harwell. ILW from the existing tube stores will be recovered and repackaged for long-term storage in the Vault Store. At Winfrith, a new treatment plant and refurbished store is being prepared for the sludges from the Steam Generating Heavy Water Reactor.

*High-level waste:* In the absence of a national disposal facility, high-level waste is stored at facilities at Sellafield and Dounreay, awaiting a policy on its long-term management. In October 2006, the UK decided geological disposal is currently the best form of long term management for the UK's higher activity radioactive waste, and plans to find interim storage for HLW as it looks to find a site.

<http://www.defra.gov.uk/environment/radioactivity/waste/pdf/corwm-govresponse.pdf>; <http://www.corwm.org.uk/content-658>

## 5. Nuclear Activities

### Nuclear Research Centers

AWE: Atomic Weapons Establishment

CECWM: Centre for Environmental Control and Waste Management

Centre for Radiochemistry Research

Centre for Waste and Pollution Research

CLRC Daresbury Laboratory

Diamond synchrotron light source

EIA Centre

EPSRC: Engineering and Physical Sciences Research Council

The Geo-environmental Research Centre

IACMST: Inter-Agency Committee on Marine Science and Technology

ICCEPT - Imperial College Centre for Energy Policy & Technology Research

The Institute of Energy

ISIS Pulsed Neutron and Muon Source

JET: Joint European Torus

MSSL: Mullard Space Science Laboratory

Natural Environment Research Council

NPL: National Physical Laboratory

Nuclear Structure Research Group

PRBNet: Permeable Reactive Barrier Network

QUASIMEME - Quality Assurance Laboratory Performance Studies for Environmental Measurements in Marine Samples

SNIFFER - Scotland & Northern Ireland Forum for Environmental Research

SRS - Synchrotron Radiation Source

UKAEA: UK Atomic Energy Authority

UKCED: Centre for Economic and Environmental Development

<http://www.radwaste.org/research.htm>

## **Nuclear Cooperation Programs**

*Russia:* The UK is a member of the Contact Expert Group (CEG) administered by the IAEA. Established in 1995, the CEG aims to “enhance safety of waste management in Russia and to promote international cooperative efforts aimed at resolving radioactive waste management issues.”

*EU:* The UK is a member of EURATOM, which aims to provide a common market in nuclear materials, to ensure nuclear fuel supplies, and to guarantee that nuclear materials are not diverted from their intended purpose. EURATOM has signed bilateral cooperation agreements to ease trade with its major partners. It also operates a comprehensive regional system of safeguards designed to ensure that materials declared for peaceful use are not diverted to military use.

*France:* At a June 2006 Summit, France and the UK agreed to set up "a regular Franco-British Nuclear Forum, involving representatives from government, industry and technical experts. The Forum will provide a vehicle to discuss Franco-British nuclear co-operation, including research, skills, decommissioning and waste management," said Prime Minister Tony Blair.

### *US: Nuclear Weapons Cooperation*

In 1958, the UK and US signed the Agreement for Cooperation on the Uses of Atomic Energy for Mutual Defense Purposes, also known as the Mutual Defense Agreement. Still in effect, it is reviewed every 10 years and covers every aspect of nuclear weapons design, development, and maintenance. This has facilitated close cooperation between the UK and the US in Britain's nuclear weapons program, often referred to as their "special relationship," including:

- “warhead design and safety - the UK Trident warhead is closely based on one of the US Trident warheads (the W76);
- leasing of missiles - the UK has access to (but does not own) a pool of Trident II D5 missiles manufactured by US defense company Lockheed Martin;
- Britain has cooperative programs with all three major US nuclear weapons laboratories, including assistance with stockpile stewardship;
- since the purchase of Polaris, Britain's strategic nuclear force has been ‘committed to NATO and targeted in accordance with Alliance policy and strategic concepts under plans made by the Supreme Allied Command Europe (SACEUR)’. NATO’s concept of nuclear deterrence, is in turn, based predominantly on US nuclear doctrine. NATO nuclear targeting strategy, for example, is carried out in accordance with US nuclear doctrine.”

BASIC: [http://www.basicint.org/nuclear/UK\\_Policy/trident\\_IDpresentation.htm](http://www.basicint.org/nuclear/UK_Policy/trident_IDpresentation.htm)

## **6. International Non-proliferation Efforts**

The UK is also a participant in the G8 Global Partnership against the spread of weapons and materials of mass destruction, launched in Kananaskis, Canada 2002.

### **Treaties Signed and Ratified**

African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba) Protocols I & II, with reservations,  
19 March 2001

Antarctic Treaty, 31 May 1960

APM Convention, 31 July 1998

Biological and Toxin Weapons Convention, 26 March 1975

Certain Conventional Weapons Convention, 13 February 1995

Comprehensive Nuclear Test-Ban Treaty, 6 April 1998

Convention on the Physical Protection of Nuclear Material

Nuclear Non-Proliferation Treaty, 29 November, 1968

Outer Space Treaty, 10 October 1967

Sea-Bed Treaty, 18 May 1972

South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga) Protocol 1 and 3, and 2 with reservations, 19 September 1997

Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco) Protocols I & II, with reservations, 11 December 1969

UK ratified the IAEA Additional Protocol 30 April 2004.

### **Multilateral Groups**

Conference on Disarmament

Hague Code of Conduct against Ballistic Missile Proliferation

Missile Technology Control Regime

Nuclear Suppliers Group

Proliferation Security Initiative

Wassenaar Arrangement

Zangger Committee

<http://first.sipri.org/index.php>

## **7. Positions Taken in International Fora on Various Issues of Nuclear Disarmament**

*Disarmament:* "[W]e do not believe that the circumstances currently exist for the UK to choose now *unilaterally* to renounce nuclear weapons... considerable bilateral progress would have to be made in reducing the large nuclear arsenals before it will be helpful and useful to include the small fraction of the global stockpile that belongs to us. It is also reasonable to suggest that a world in which complete nuclear disarmament became possible would be one in which we could all be confident in the compliance by all states with their non-proliferation obligations under a universalized Non Proliferation Treaty." - **Statement by Dr. Kim Howells, Minister of State, Foreign & Commonwealth Office to the Conference on Disarmament, Geneva, 22 February 2007**

<http://www.reachingcriticalwill.org/political/cd/speeches07/1session/Feb22UK.pdf>

"[W]e have consistently stated that when we are satisfied that sufficient progress has been made--for example in further deep cuts in their nuclear forces by the US and Russia--to allow us to include the UK's nuclear weapons in any multilateral negotiations, without endangering our interests, we will do so." - **Statement by Ambassador John Freeman, Head of UK delegation to the Seventh Review Conference of the NPT, Main Committee I, New York, 19 May 2005**

<http://www.reachingcriticalwill.org/legal/npt/RevCon05/MCI/UK.pdf>

*Negative Security Assurances:* "I would like to take this opportunity to reaffirm the United Kingdom's Positive and Negative Security Assurances given in 1995 and repeated in United Nations Security Council Resolution 984. We remain committed to those Security Assurances. In addition we have given legally binding NSAs in Treaty form through the Protocols we have signed to the Nuclear Weapon Free Zone Treaties... We therefore believe that our 1995 NSA and the Protocols we have signed offer Non-Nuclear Weapon States the assurance they seek regarding nuclear use." - **Statement by Ambassador John Freeman, Head of UK delegation to the Seventh Review Conference of the NPT, Main Committee I, New York, 19 May 2005.** <http://www.reachingcriticalwill.org/legal/npt/RevCon05/MCI/UK.pdf>

*Fissile Materials:* "More recently the question has been raised as to whether realistic, effective verification of an FMCT is verifiable at all. All these arguments will obviously have to be considered and debated in any negotiation. And they raise the possibility of agreeing a Treaty without any verification arrangements that would nevertheless establish a new norm against the production of fissile material for nuclear weapons or other nuclear explosive devices. Another issue might be whether there should

be some phased approach to this matter - beginning just with an unverified normative Treaty but leaving open the possibility of introducing verification measures at a later date. Alternatively, could there be some role for confidence-building measures?" - **Statement by Andrew Barlow, Head of Arms Control and Disarmament Research Unit to the Conference on Disarmament, Geneva, 17 May 2006.** <http://www.reachingcriticalwill.org/political/cd/speeches06/17MayUK.pdf>

*The Middle East:* "We continue to support the Resolution on the Middle East from the 1995 NPT Review Conference. In particular, we have consistently supported a Middle East Nuclear Weapon Free Zone and more broadly, a Middle East zone free of weapons of mass destruction." - **H.E. Ambassador John Freeman, Head of UK delegation to the Seventh Review Conference of the NPT, Main Committee II, New York, 20 May 2005.** <http://www.reachingcriticalwill.org/legal/npt/RevCon05/MCII/UK20.pdf>

*Proliferation:* "The proliferation of nuclear, chemical and biological weapons will never be halted outside of an international consensus to do so." - **Statement by Prime Minister Tony Blair to the World Summit of the 60th Session of the General Assembly, New York, 14 September 2005.** <http://www.un.org/webcast/summit2005/statements/uk-blair050914eng.pdf>

*Nonproliferation / Nuclear Energy:* "The United Nations must strengthen its policy against non-proliferation; in particular, how to allow nations to develop civil nuclear power but not nuclear weapons." - **Statement by Prime Minister Tony Blair to the World Summit of the 60th Session of the General Assembly, New York, 14 September 2005.** <http://www.un.org/webcast/summit2005/statements/uk-blair050914eng.pdf>

*Fuel Cycle:* We would like to see the combinations of a Comprehensive Safeguards Agreement and Additional Protocol accepted as a future condition of supply for sensitive nuclear materials." - **Statement by H.E. Ambassador John Freeman, Head of UK delegation to the Seventh Review Conference of the NPT, New York, 5 May 2005.** <http://www.un.org/events/npt2005/statements/npt05unitedkingdom.pdf>

*Safeguards:* "The UK agrees that a Comprehensive Safeguards Agreement together with the Additional Protocol represent today's verification standard... The UK believes that it is right that the safeguards regime should be subject to continuous review. We need to give the Agency the best possible resources and tools. If that means looking at new technologies, new techniques or new sources of information, so be it: the Agency must be allowed to develop its methods." - **Statement by H.E. Ambassador John Freeman, Head of UK delegation to the Seventh Review Conference of the NPT, Main Committee II, New York, 20 May 2005.** <http://www.reachingcriticalwill.org/legal/npt/RevCon05/MCII/UK20.pdf>

*Article VI:* The exercise of [the Article IV] right depends on compliance with Articles I and II of the Treaty and with the safeguards provisions of Article III. When a State fails to meet these compliance obligations, it necessarily forfeits confidence in the exclusively peaceful nature of its nuclear ambitions." - **Statement by Ambassador Peter Jenkins to the 2005 NPT Review Conference, Main Committee III, New York, 23 May 2005.** <http://www.reachingcriticalwill.org/legal/npt/RevCon05/MCIII/UK23.pdf>