

THE UK's DEPENDENCY ON US SUBMARINE AND MISSILE TECHNOLOGY

When the Government says UK Trident is 'Independent' they are being very economical with the facts. Whilst it is correct that RN missiles do not require specific US aid for targeting, launch or guidance in flight - with the notable exception of supply of the missiles in the first case - the UK's deep dependency on US technical and political support means that the US do have the tools to inhibit or frustrate launch if they so wished.

" The Trident Weapon System is...a hostage to American goodwill... the dependency is critical and will continue to be" (Professor Colin Gray in evidence to the Defence Committee in 2006)

"If the United States were to withdraw their cooperation completely, the UK nuclear capability would probably have a life expectancy measured in months" (Report published in July 2014 by the British American Security Information Council (BASIC). This Council is comprised but did not really address the fundamental issue I raised. of cross party groups from both nations.

UK Parliament Select Committee on Defence Report of 7 March 2006

UK'S TRIDENT SYSTEM NOT TRULY INDEPENDENT

(para numbers as in Annex B to the report)

33. Acquiring Trident gave the UK a greater nuclear weapons capability than it could ever have achieved on its own. This enhanced capacity, however, had significant consequences.

34. The fact that, in theory, the British Prime Minister could give the order to fire Trident missiles without getting prior approval from the White House has allowed the UK to maintain the façade of being a global military power. In practice, though, it is difficult to conceive of any situation in which a Prime Minister would fire Trident without prior US approval. The USA would see such an act as cutting across its self-declared prerogative as the world's policeman, and would almost certainly make the UK pay a high price for its presumption. The fact that the UK is completely technically dependent on the USA for the maintenance of the Trident system means that one way the USA could show its displeasure would be to cut off the technical support needed for the UK to continue to send Trident to sea.

35. In practice, the only way that Britain is ever likely to use Trident is to give legitimacy to a US nuclear attack by participating in it. There are precedents for the USA using UK participation in this way for conventional military operations. The principal value of the UK's participation in the recent Iraq war was to help legitimise the US attack. Likewise the principal value of the firing of UK cruise missiles as part of the larger US cruise missile attack on Baghdad was to help legitimise the use of such weapons against urban targets.

36. The most likely scenario in which Trident would actually be used is that Britain would give legitimacy to a US nuclear strike by participating in it.

37. The well-established links between the US Strategic Command (STRATCOM), in Omaha Nebraska and the UK's Permanent Joint Headquarters in Northwood, London would facilitate the planning of such attacks. In a crisis the very existence of the UK Trident system might make it difficult for a UK prime minister to refuse a request by the US president to participate in an attack.

38. The UK Trident system is highly dependent, and for some purposes completely dependent, on the larger US system. The assembling of information available in the USA, but kept secret in Britain, by John Ainslie in his 2005 report *The Future of the British bomb*, shows how extensive this dependency is (see table below).

Item	Comment
<i>Warhead</i>	The UK warhead is a copy of the US W76 warhead.
Arming, fusing and firing system	This triggers the explosion. The model used in UK warheads was designed by the US Sandia Laboratory and is almost certainly procured from the USA.
High-explosive (HE)	This starts the nuclear explosion. The UK uses a different HE to the USA. Key explosives calculations for the US warhead cannot simply be duplicated so US labs assess the UK HE's long-term performance.
Neutron generator	This initiates nuclear fission. The neutron generator used in UK warheads is the MC4380, which is manufactured in the USA and acquired "off the shelf".
Gas reservoir	This supplies tritium to boost the fission process. It is most likely that the reservoir used in UK warheads is manufactured in the USA. UK gas reservoirs are filled with tritium in the USA.
Re-entry body shell	This is the cone-shaped body which contains the warhead. The UK purchases the Mark 4 re-entry body shell from the USA.
<i>The D5 missile</i>	The UK does not own its Trident missiles—they are leased from the USA. UK Trident submarines must regularly visit the US base at King's Bay, Georgia to return their missiles to the US stockpile for maintenance and replace them with others.
Guidance system	The Mark 6 guidance system used on the UK's Trident D5 missiles is designed and made in the USA by Charles Stark Draper Laboratories.
<i>Submarines</i>	UK Vanguard-class Trident submarines are UK-made, but many aspects of the design are copied from US submarines and many components are bought from the USA.
Navigation	The high accuracy of the Trident D5 missile depends on the submarine's position being precisely determined. This is achieved using two systems: GPS, which relies on satellites, and the Electrostatically Supported Giro Navigation System (ESGN), which uses gyroscopes. In both cases UK Trident submarines uses the same US system as the US Navy submarines. The USA has the ability to deny access to GPS at any time, rendering that form of navigation and targeting useless if the UK were to launch without US approval.
<i>Targeting</i>	Target packages are designed and formatting tapes produced on shore, then stored on the submarine—using US software at each stage.
Onshore targeting	The software installed in the computers at the Nuclear Operations and Targeting Centre in London is based on US models and is probably derived from the US Navy's Submarine Launched Ballistic Missile Integrated Planning System.
Weather and gravity data	The US Navy supplies local gravitational information and forecasts of weather over targets, both of which are vital to high missile accuracy, to US and UK submarines.
Fire control system (FCS)	Used to assign targets to the warheads on the submarines. UK submarines carry a slightly different model to that on US submarines. However, all the hardware and software used by the system is US-produced. The hardware is produced by General Dynamics Defense Systems. The contracts show that the UK uses similar, if not quite identical, software.
<i>Management</i>	British nuclear warheads are designed and made at Aldermaston near Reading. Aldermaston is part managed by the US corporation Lockheed Martin. Repairs to Britain's Trident submarine are carried out at Devonport, which is part managed by another US corporation, Halliburton.

<i>Research and development</i>	There is extensive cooperation between Aldermaston and America's nuclear weapon laboratories—Los Alamos in New Mexico and Sandia and Lawrence Livermore in California.
<i>Testing</i>	The W76 warhead was tested at the US nuclear test site in Nevada in the early 1990s. The UK has no test site of its own. The missiles are test launched from British submarines under US supervision at Cape Canaveral off the Florida coast.

39. The UK's dependency on the USA has operational significance. For example, the UK's reliance on US weather data and on navigational data provided by the US Global Positioning System (GPS) means that, should the USA decide not to supply this data, the capacity of the UK's Trident missiles to hit targets would be degraded.

40. Conversely, the close relationship between US and UK systems also means that the upgrades to the US Trident system have already been incorporated into the UK Trident system*. The Royal Navy's adoption of the new US fire control system has most likely already improved its capacity to retarget its Trident missiles rapidly in order to hit a range of targets outside Russia—thereby adding to other states' concerns that they could be the target of a combined US/UK Trident strike.

* Note: the US is designing and building a common 12 missile module for both the USN and RN Trident 'Successor' submarines. UK is funding its share of the research and production. This is planned to go to sea with the RN in the Dreadnought class before it does so with the USN.