

## Is Trident really independent?

Below are a number of points which could be investigated in more detail:

1. The UK Trident targeting system is vulnerable to a cyber attack from the US which could prevent the independent use of Trident when not authorised by the US:
  - a. The detailed target plans for UK Trident are created by the Strategic Weapon Targeting System (SWTS). The MOD have described this as an area where the UK "goes it alone". However this is not true. SWTS is ~~heavily~~ wholly dependent on US models and software. It is also linked to the US targeting system through the United Kingdom Liaison Office at STRATCOM headquarters in Omaha, Nebraska. For targeting within the NATO system the UK takes target data from the US national system and the joint plan is de-conflicted by STRATCOM.
  - b. On each submarine there is a Fire Control System. This takes information from the targeting plan and uses it to programme how to ~~the~~ launch missiles and warheads at the designated targets. The Fire Control System is entirely composed of US hardware and software.
  - c. The Flight Control and Guidance systems on D5 missiles are entirely composed of US hardware and software.
  - d. The Arming Fuzing and Firing System (AF&F) in the UK Trident warhead is manufactured in the US. A new Mk4A AF&F is entering service. It is more sophisticated and includes a US-built Intent Word system which ~~sends~~ utilises a unique code which is required for the warhead to detonate.
2. The UK nuclear firing chain is vulnerable to a cyber attack from the US which could prevent the independent use of Trident when not pre-authorised by the US. Because of the historic close collaboration between the US and UK, the US ~~should be able to~~ could easily obtain technical information, openly or covertly, on: the functioning of Command Task Force 345 in Northwood (the operational command post for Trident submarines), the VLF transmitters at Skelton and Anthorn (the prime means of communicating with Trident submarines), the cryptographic systems used in UK Trident and other more heavily classified elements of the nuclear firing chain.
3. The effectiveness of Trident is dependent on the submarine on patrol remaining undetected at all times. The US is in a ~~far stronger~~ more advantageous position than any other nation ~~to~~ with regard to identifying the position of the vessel on patrol. They will be aware of the general area it is in. They will know all the weaknesses in the design of the submarines and in their operating practice. This means that they are vulnerable to detection by the US. In extremis, the US could threaten to, and if necessary ~~carry out, an attack~~ restrict the operations by force of ~~on~~ the UK submarine.
4. The decision to acquire Trident was based on the 1979 Duff Mason report. This defined "independence" as holding 12 months supply of spare parts. These include the flight control and guidance units in each missile, which need to be regularly replaced. The Trident warhead includes 3 Limited Life Components which must each be replaced after a few years. All three are manufactured in the US. There are many other areas where the UK Trident system is dependent on ongoing critical support from the US including Fire Control software. If this support was withdrawn then the size of the operational arsenal, the accuracy of the missiles and the reliability of the warheads would rapidly decline and atrophy.

5. The plans to renew Trident are dependent on continuous US assistance in many areas, including the production of a new reactor, other aspects of the Successor submarine programme and the development of a new nuclear warhead. The Successor submarine is not due to enter service until the "early 2030s". The programme would be in jeopardy if the US Government withdrew or reduced its political, military and/or technical expertise support at any point over the next 16 years.