

# No place for Trident

Scottish independence  
and nuclear disarmament



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## **Summary**

The people of Scotland have a rare privilege, the power to cast a vote which can lead to nuclear disarmament. The occasions when British electors have been able, at the ballot box, to ban the bomb have been rare – none in the last 27 years and only a few times in earlier years. In the United States and France there has never been an election where a party advocating nuclear disarmament had a serious prospect of winning. Scots are fortunate and we should not squander our opportunity.

If Scotland gains its independence, there are several possible outcomes for Trident. A deal might be struck to permit the nuclear submarines to stay on the Clyde for decades. Trident could be relocated to elsewhere in Britain or abroad. But there are major problems with each of these options. The most likely outcome is that Scotland will free itself of nuclear-weapons and that London will decide to scrap Trident and its replacement.

### *Option 1 A deal to lease Faslane*

Some commentators assume that there would be a grubby compromise which allowed Trident to stay. But such a treaty would be hard to achieve because of the gulf between the two parties. The Ministry of Defence (MoD) in London are not looking for a short-term agreement, they want full control over Coulport and Faslane for half a century. They won't commit to their £100 billion programme for Trident replacement without a guarantee that the new submarines have a home for life. By coincidence, the decision to build these vessels is due to be made in the same year that Scotland would gain independence.

The Scottish government has proposed that all nuclear weapons should be removed by 2020 and that the constitution of an independent Scotland should prohibit these Weapons of Mass Destruction. Opposition to nuclear weapons is a central tenet of faith for many members of the SNP. It is not a tactical position which could be readily abandoned. The party's decision to support NATO membership should not be exaggerated. The resolution, passed at their 2012 conference, clearly said that NATO membership was conditional on the removal of Trident. The SNP leader and First Minister, Alex Salmond, explicitly ruled out a Trident deal in interviews with Sky Television and the BBC on 30 March 2014.

Support for disarmament is widespread across society and civic Scotland. With a new freedom to determine their own defence policy, both Scottish Labour and the Scottish Liberal Democrats are likely to abandon Trident. The Tories could be the only party supporting nuclear weapons in the election for the first independent parliament in 2016.

In the years after independence, disarmament campaigners would have no time to rest. They would need to work to ensure that the SNP stuck to their principles, and to inspire other political parties to shun Trident. There is a good chance that these efforts would succeed. They would be building on the solid foundations of civic Scotland's opposition to nuclear arms. A new confident Scotland could hold its ground. While the arms industries in England and America might try to use their muscle, we would have new friends abroad, from the many non-nuclear nations who are behind the latest global initiative to ban nuclear weapons.

Supporters of Better Together may imply that Scotland is too weak and too poor to ban the bomb. But they are wrong. We can forge a new path in the world, hand-in-hand with the multitude of countries which reject nuclear weapons.

### *Option 2 Moving Trident to England or Wales*

Relocating Trident is not like moving house. The closest parallel would be trying to shift a nuclear power station. In fact, finding a site for Trident would be far harder. Two new

facilities would be needed: a submarine base to replace Faslane and a nuclear weapons' depot to replace Coulport. The second would be the biggest problem. As an MoD source told the Telegraph, "there simply isn't anywhere else where we can do what we do at Coulport".

The most obvious alternative is the submarine base at Devonport. Building a nuclear weapons' depot here would be out of the question, because the site is within the city of Plymouth which has a population of 250,000. Even using it as a base for Trident submarines is unlikely. Currently Vanguard class submarines are not allowed to berth at Devonport if they are carrying Trident missiles.

The only other nuclear submarine site is Barrow. This is unsuitable for an operation base because of the severe tidal restrictions on access to the dock. In addition, like Devonport, it is in an urban area. This means that handling Trident missiles would be ruled out on safety grounds.

With Devonport and Barrow eliminated, the MoD would try to find a suitable Greenfield site. This would be intrinsically difficult. Today new nuclear power stations can only be built alongside existing nuclear plant. The option of building a replacement for Coulport had been raised in 1979. The Permanent Secretary at the MoD said they would never get permission to build such a facility on a Greenfield site. This was before the accidents at Chernobyl and Fukushima and before the rise of the modern environmental movement. Opposition to creating a new nuclear weapons' depot would be so strong that finding any Greenfield site would be almost impossible.

Two locations which were considered as options for Polaris in 1963 were Milford Haven and Falmouth. Milford Haven was ruled out because introducing Polaris would have meant closing the one oil refinery which was operating in the estuary in the 1960s. Today the site handles a large proportion of Britain's oil and gas through a series of facilities. This means that basing Trident here is not a viable option.

Building a replacement for Coulport on the peninsula North of the town of Falmouth would be highly controversial. The option was ruled out in 1963 because of the potential problems with acquiring the necessary land. This would be an even greater issue today. In addition, the safety considerations arising from the proximity to Falmouth would be a major problem.

As a former Defence Minister has acknowledged, relocating Trident would be the least favoured option from the MoD's perspective. Experts agree that it would be very expensive, difficult and time consuming. This report goes further and argues that, in practice, none of the relocation sites are viable.

#### *Option 3 Moving Trident to the US or France*

In the early 1980s the government considered basing the Trident fleet in the US, to save money. The idea was dismissed for a combination of legal and political reasons. The Scottish Affairs Committee in the House of Commons expressed a similar view in a recent report. France is even less likely. The existing site, Ile Longue, is not suitable and so a new base would need to be constructed at a new location in France. This would be even more difficult than building on a Greenfield site in England.

#### *Option 4 An alternative nuclear weapon system*

In July 2013 the UK Government published their review of alternatives to a submarine-based ballistic missile system. This effectively dismissed all the other options, because they would not be available until the 2040s.

### *Option 5 Disarmament*

Two Admirals and the Chair of the Defence Committee have suggested that the outcome of Scottish independence may be unilateral nuclear disarmament. A range of senior political figures have said that it would at least force a major rethink of the plan for Trident replacement.

In the absence of any politically and economically viable alternative, it is likely that London would decide to scrap Trident and to abandon all plans for a replacement.

The practical steps required to move all nuclear weapons out of Scotland could be completed within two years and all of the weapons could be dismantled within four years.

Far from being a Not In My Back Yard approach, if Scots vote YES and then reject Trident, this will lead to a nuclear-weapons free Britain and set an example to the rest of the world.

Individuals, companies and political parties who want Britain to keep Trident can be expected to argue that Scotland must vote NO. This is the only way to ensure that Britain continues to hold onto its nuclear arsenal. Conversely, advocates of nuclear disarmament should back independence, because it offers a clear route to banning the bomb.

### **Option 1 A deal to keep Trident in Scotland**

From an MoD perspective, the most attractive option, in the event of Scottish independence, is that the rest of the UK (rUK) retain full control over Faslane and Coulport for at least 50 years. The sites would effectively be small corners of rUK within Scotland for half a century or more. But a 50 year lease of Faslane and Coulport as a rUK Sovereign Base Area would be politically unacceptable and incompatible with the proposals, in Scotland's Future, that the constitution should include a ban on nuclear weapons and that all the weapons should be removed by 2020.

On 29 March 2014 the Guardian quoted an unnamed minister in the UK government as saying that London might support Scotland having the pound as its currency in exchange for keeping Trident on the Clyde. The following day, First Minister Alex Salmond made it clear that there would be no deal on Trident, "Opposition to nuclear weapons is not a negotiating position or campaigning tactic. It is one of the reasons we believe in Scottish independence. ... Opposition to nuclear weapons is fundamental to the independence case".<sup>1</sup>

#### Terms of a lease agreement

On 13<sup>th</sup> June 2012 Nick Harvey MP, Armed Forces Minister, said that retaining Faslane and Coulport would be the preferred option. The alternative, building new sites, was far less attractive - "relocation would be just about the least favoured option that it would be possible to conjecture."<sup>2</sup> Alan Reid MP asked what conditions the UK government would lay down in any lease agreement. Harvey replied - "I think the critical one would be complete freedom of action - complete control and complete sovereignty over the facility ... the critical point of principle would be to have complete control over what we did there."<sup>3</sup>

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<sup>1</sup> Sunday Politics Scotland, BBC Scotland, 30 March 2014

<sup>2</sup> The Referendum on Separation for Scotland, Session 2012-13, Scottish Affairs Committee, Oral and written evidence, 17 July 2012. Ev 51

<sup>3</sup> *ibid*

This issue reappeared one year later when the Guardian reported that the UK government were considering retaining Faslane as a Sovereign Base Area. The paper quoted a defence source as saying, “It is an interesting idea because the costs of moving out of Faslane are eye-wateringly high.”<sup>4</sup> When the BBC followed up this story they received an email from the MoD saying “The sovereign base area is an option. It is an interesting idea”.<sup>5</sup>

The official response from Downing Street was dismissive. A spokesperson said, “No such ideas have come to the secretary of state or the prime minister. They would not support them if they did. It is not a credible or sensible idea.”<sup>6</sup> But this should not be taken at face value. When the story appeared in the Guardian, Alistair Darling, leader of the Better Together campaign urged the Government to deny it. One source, close to a cabinet minister, described the MoD’s proposal as “a ridiculous thing to say” and added “talk about handing a gift on a plate to the SNP”.<sup>7</sup> The Guardian report said that Downing Street were appalled that the MoD’s private thinking on this issue had entered the public domain. In other words, the UK Government’s concern was not that the report was inaccurate, but that it was politically counterproductive. Publishing the idea of a Sovereign Base Area would encourage more people to vote Yes.

It is almost certain that rUK would insist on full control over Coulport where the missiles and nuclear warheads are stored and processed. If rUK sought to have full control over the whole of Faslane, this would conflict with SNP plans to transform the site into the base for the Scottish Navy. Any attempt to divide Faslane would be complicated. For example, if rUK controlled only the Northern area, where Trident submarines are berthed, this would leave many of the support buildings and the crew accommodation in an area controlled by the Scottish government.

The MoD might try to dress up the lease proposal so that it looked less like a Sovereign Base Area, less like the Irish Free Ports, Guantanamo Bay and Kaliningrad. But the reality is that the degree of control which Nick Harvey said was essential would mean that Coulport and a large part of Faslane would, in effect, be rUK sovereign territory.

#### Timescale of a lease agreement

Malcolm Chalmers and William Walker say, “As a starting point, the UK government is likely to insist that current SSBNs, together with successor submarines and supporting naval and land-based security forces, should continue to be based at Faslane and Coulport for the indefinite future.”<sup>8</sup>

From the MoD’s perspective a short-term lease would be problematic. Philip Hammond suggested that Trident could be moved in a decade if it was an absolute priority.<sup>9</sup> But this is an unrealistically short timescale. Defence Equipment Minister Peter Luff pointed out that building new nuclear facilities was a long process, as construction of the new jetty for Astute class submarines at Faslane had shown. It had taken the MoD 14 years, from 1980 to 1994, to adjust the existing Polaris bases at Coulport and Faslane for Trident. Nick Harvey made it clear to the Scottish Affairs Committee that relocating Trident

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<sup>4</sup> MoD fears for Trident base if Scotland says yes to independence, Nicholas Watt, Guardian, 10 July 2013.

<sup>5</sup> Trident submarine base: No 10 disowns MoD’s Faslane sovereignty proposal, Nicholas Watt, Guardian, 11 July 2013.

<sup>6</sup> Trident submarine base: No 10 disowns MoD’s Faslane sovereignty proposal, Nicholas Watt, Guardian, 11 July 2013.

<sup>7</sup> *ibid*

<sup>8</sup> Will Scotland Sink the United Kingdom’s Nuclear Deterrent? Malcolm Chalmers and William Walker, *The Washington Quarterly*, Summer 2013, p 109

<sup>9</sup> <http://www.theguardian.com/uk-news/2013/jul/10/costs-moving-trident-analysis>

would be a much bigger project. It would involve creating a new nuclear weapons' store on a Greenfield site. Professor William Walker suggested that 20 years would be a minimum timescale for finding new sites and building new facilities. His view was adopted by the Scottish Affairs Committee.

So the shortest lease that is likely to be acceptable to rUK would be one which gave the MoD control over Coulport and a large part of Faslane for 20 years. But, from a Whitehall perspective, there are two problems with a 20-year lease. The first is that they would prefer to keep Trident at Faslane rather than relocating. Secondly, when the MoD looked in detail at the possible alternative sites they might conclude, as the next section of this report suggests, that none of the options were viable. A 20-year lease, with no relocation site, would mean that the MoD would spend billions on the Trident replacement programme, only to abandon the system in 2036, shortly after it entered service. The MoD will not have the high confidence in the viability of relocating Trident, which a 20-year lease would require.

The Trident replacement programme includes the production of 3 or 4 new submarines which are scheduled to remain in service until 2067. Given that billions of pounds are being spent on this project and that the expenditure is due to increase over the next decade, the MoD will want to have confidence that they can continue to deploy these new vessels over their planned lifetime. This means that they are likely to seek a lease of Faslane and Coulport for at least 50 years.

#### Scottish Government's plans

Scotland's Future proposes that the constitution of an independent Scotland should include an explicit ban on the deployment of nuclear weapons. Today there are 90 countries in the world which are recognised as nuclear-weapon free zones.<sup>10</sup> The constitution of the Philippines says that the country "adopts and pursues a policy of freedom from nuclear weapons on its territory".<sup>11</sup> Austria has passed a Constitutional Act which says that "nuclear weapons must not be manufactured, stored, transported, tested or used in Austria".<sup>12</sup> New Zealand has legislation which forbids its citizens from participating in any activity related to nuclear weapons.<sup>13</sup> Mongolia has a law which asserts its nuclear-weapon free status.<sup>14</sup> Kazakhstan inherited 1,410 nuclear weapons when it became independent in 1991. These weapons were all removed within 3 years and 4 months and then dismantled.<sup>15</sup> Today the country is part of the Central Asian Nuclear Weapons Free Zone.<sup>16</sup>

A constitutional ban would place firm obligations on the Scottish government. It would rule out the possibility that the Scottish government might negotiate a deal to allow Trident to remain on the Clyde. It would also be a long-term measure, making it very difficult for any future government to permit the deployment of nuclear weapons on Scottish land or waters. A constitutional ban on nuclear weapons would also be a sign of the type of nation that Scotland sought to be. It would signal that we wished to be a peace-loving, responsible member of international society.

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<sup>10</sup> 89 countries are covered by Nuclear Weapon Free Zone treaties and Mongolia is a single state Nuclear Weapon Free Zone.

<sup>11</sup> [http://www.concourt.am/armenian/legal\\_resources/world\\_constitutions/constit/philipin/philippe.htm](http://www.concourt.am/armenian/legal_resources/world_constitutions/constit/philipin/philippe.htm)

<sup>12</sup> [http://www.ris.bka.gv.at/Dokumente/ErV/ERV\\_1999\\_1\\_149/ERV\\_1999\\_1\\_149.pdf](http://www.ris.bka.gv.at/Dokumente/ErV/ERV_1999_1_149/ERV_1999_1_149.pdf)

<sup>13</sup> <http://canterbury.cyberplace.org.nz/peace/nukefree.html>

<sup>14</sup> <http://canterbury.cyberplace.org.nz/peace/nukefree.html>

<sup>15</sup> The last nuclear weapon was removed from Kazakhstan on 21 April 1995.

<sup>16</sup> <http://www.fas.org/news/kazakh/950526-393188.htm>

<sup>16</sup> <http://cns.miis.edu/inventory/pdfs/aptcawz.pdf>

Prior to the publication of Scotland's Future the SNP indicated that they would seek the speediest safe withdrawal of Trident. The White Paper was clearer, saying that all nuclear weapons should be removed within the term of the first independent Scottish Parliament, ie by 2020.

#### Would a Scottish government do a deal and keep Trident?

If Scotland votes Yes in September 2014, then 20 months later, in May 2016, there will be an election for the first independent Scottish Parliament. The only party which would be likely to stand on a pro-Trident platform in this election would be the Scottish Conservatives.

In November 2012 Scottish CND and SNP CND lobbied the SNP to encourage the party to retain its policy of opposition to membership of NATO. The party's conference voted by a very small margin to support an independent Scotland being a member of the alliance, so long as this did not conflict with removing nuclear weapons. It would be wrong to suggest that the vote was the first step in a move towards the SNP accepting Trident. The change in policy was made on the grounds that support for NATO would result in more Yes votes in the referendum. It coincided with the announcement that that the constitution of an independent Scotland should include an explicit ban on nuclear weapons.

Opponents of independence have made an issue of whether an independent Scotland would seek clarification of whether visiting surface ships were carrying nuclear weapons. But this is a red herring. US surface ships have not carried nuclear weapons since 1991.

Concern has been expressed that, after independence, a SNP Government might renege on its commitment to remove Trident, in order to secure membership of NATO. However this is very unlikely, as it would not be acceptable within the party. The resolution passed at the October 2012 conference said "An SNP Government will maintain NATO membership subject to an agreement that Scotland will not host nuclear weapons and NATO continues to respect the right of members to only take part in UN sanctioned operations. In the absence of such an agreement, Scotland will work with NATO as a member of the Partnership for Peace programme."<sup>17</sup>

The SNP's demand for the removal of Trident is not just an electoral tactic, which could be abandoned on pragmatic grounds. In February 2014 Mure Dickie wrote in the Financial Times that, "opposition to the stationing of nuclear missile submarines on the Clyde was an important driver of the rise of the Scottish National Party in the 1960s and 1970s and it remains implacably opposed to such 'immoral and obscene' weapons".<sup>18</sup> A few days later Douglas Fraser, BBC economics editor, described how opposition to nuclear weapons was a core issue for the SNP, second only to independence itself.<sup>19</sup> This is the party of people such as the late Billy Wolfe, former party leader and staunch anti-nuclear campaigner. Deputy First Minister Nicola Sturgeon was a member of CND before she joined the SNP. She told the Financial Times, "Getting rid of Trident is an issue of principle, certainly for the party and the government that I represent. It's not a bargaining chip."<sup>20</sup> Alex Salmond adopted a similar position in interviews with Sky television and the BBC on 30 March 2014. On 11 April 2014 the Herald reported that Tory minister David Mundell had said "there is no deal to be done" because the SNP were so committed to their anti-nuclear stance.

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<sup>17</sup> In full: SNP resolution on Nato, <http://www.scotsman.com/news/politics/top-stories/in-full-snp-resolution-on-nato-1-2414919>

<sup>18</sup> Anti-nuclear stance was important driver in rise of SNP, Mure Dickie, Financial Times, 5 February 2014

<sup>19</sup> Scotland's top ten battlegrounds, BBC Scotland, 11 February 2014

<sup>20</sup> Independence Scotland would face huge pressure over Trident bases FT 11 July 2013  
<http://www.ft.com/cms/s/0/fbfd6f30-ea4c-11e2-913c-00144feabdc0.html>



The current SNP government will remain in power during the initial transition period, between September 2014 and May 2016. It is almost inconceivable that the SNP would perform a U-turn on Trident during this period, because of the strength of feeling amongst party members and because they would be facing an election.

The Scottish Labour Party would have a short time to refocus, between the referendum and the election. It is worth noting that, apart from the payroll vote, very few Labour MPs from Scottish constituencies voted in favour of Trident replacement in March 2007. Likewise Labour MSPs avoided voting in favour of Trident replacement in December 2006 and June 2007. Many Labour MPs and MSPs are reluctant to speak out on the issue, and to contradict UK party policy. However, the evidence suggests that only a minority support Trident. The STUC remains resolutely opposed to nuclear weapons. In the event of independence, the Scottish Labour Party are unlikely to adopt a pro-Trident stance and might position themselves as clearly opposed to nuclear weapons. The same is true of the Scottish Liberal Democrats. The only question would be how quickly the two parties would adjust their policies. The May 2016 election would force them to rapidly re-examine issues which were previously avoided at Scottish conferences because they were reserved to Westminster.

Scotland's Future proposes that the constitution of an independent Scotland would be drawn up by a constitutional convention. Many of the key institutions in Scottish society, such as churches and trade unions, are strongly opposed to Trident. They would have a significant input into the convention. Individuals would also be able to contribute. Having put forward the proposal for a constitutional ban on nuclear weapons, it would be very difficult for the SNP to later try to reject it. The likely support from civic Scotland and the public would also mean that the idea would not be opposed by Scottish Labour or the Scottish Liberal Democrats after independence.

#### Strength of support for Trident in rUK

It currently looks as if all three main UK parties will go into the 2015 general election with manifestos which support the replacement of Trident with a fleet of new ballistic-missile submarines. The Liberal Democrats had earlier rejected the prospect of a like-for-like replacement but, following the Trident Alternatives Review, they have come down in favour of a ballistic-missile-submarine system. They differ from the other two parties in that they propose that fewer submarines should be built and that it is not necessary to keep one vessel at sea on patrol.

The strength of this apparent political consensus should not be exaggerated. Faced with Scottish independence, support for Trident replacement may crumble. A report in the Financial Times on 5 February 2014 said, "MPs from all three main Westminster parties told the Financial Times they would reconsider whether to invest in a replacement for the Trident-based missile system in the event of a vote for Scottish independence in September, given the costs of overcoming the Scottish National Party's resistance to continuing to house it in Scotland".<sup>21</sup>

A senior Liberal Democrat MP told the paper that, if there was a Yes vote, the Liberal Democrats would want to reopen the question of a like-for-like replacement. James Arbuthnot, the Conservative MP who chairs the Defence Committee Chair, said that independence would cast doubt on continuous patrols and that "we might even have to

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<sup>21</sup> Scots' vote threatens to make Trident unaffordable say MPs, Kiran Stacey and Carola Hoyos, Financial Times, 5 February 2014.

consider the option of unilateral nuclear disarmament”.<sup>22</sup> A shadow Labour minister commented, “We’ve decided to back continuous-at-sea deterrence but Scottish independence is the one event that would force us to reconsider that.”<sup>23</sup> This is similar to a remark made, in December 2012, by Defence Minister Andrew Robathan. He told the House of Commons, “Current Government policy is to continue with the continuous at sea nuclear deterrent based on Trident. Should the Scots vote for independence – God forbid! – we would need to review the situation.”<sup>24</sup>

For advocates of the nuclear navy, Continuous-At-Sea-Deterrence (CASD) is a vital aspect of the nuclear force. Some would even argue that Britain should either retain CASD or give up its nuclear capability all together. But the need to continue with CASD has recently been questioned by several former defence ministers, including Des Browne, the Labour minister who started the Trident replacement project, and Tom King, a former Conservative minister. There are major cracks in the traditional rationale for the British nuclear weapons’ programme. These weaknesses are unlikely to be sufficient, on their own, to halt the project. But they create a climate within which a Yes vote could be enough to topple Trident.

While substantial sums have already been spent on Trident replacement, most of the £100 billion expenditure lies in the future. There is a critical milestone in 2016 when the main gate decision will be made and orders placed for the first new submarines. If Scotland becomes independent and the MoD’s hopes for a long-term lease of Faslane and Coulport are dashed, then there will be so much uncertainty over the future of Trident replacement that funding is unlikely to be authorised in 2016.

There will be senior figures within the military who would welcome an opportunity to scrap Trident. The Trident replacement programme will put the squeeze on all other defence projects over the next decade. It will consume 10% of the entire defence budget and 30% of the defence procurement budget in the early 2020s. General Nicolas Houghton, Chief of Defence Staff, questioned aspects of defence policy in a speech at the Royal United Services Institute in December 2013. He argued that defence procurement should focus on threats such as terrorism, cyber warfare and climate change, rather than on conflict with states with similar military capabilities to our own. Houghton warned that the MoD, especially the Navy, was in danger of having “exquisite equipment, but insufficient resources to man that equipment or to train on it”.<sup>25</sup> While he did not specifically mention Trident, it is the prime example of the type of project that he was criticising.

#### America’s response

Some powerful groups in the US would be concerned about Scottish independence resulting in UK nuclear disarmament. Lockheed Martin, one of the biggest arms companies in the world, built the Trident missile system. They have a dominant role at Aldermaston and Coulport. They could be expected to use their muscle and try to retain the UK’s Trident force. There are also a small number of influential officials and politicians who would do the same. But America’s enthusiasm for the British bomb should not be exaggerated. The issue is not on the agenda for most of those in the White House and Congress.

The historical record is ambiguous. Successive US governments have provided vital support for Britain’s nuclear weapons’ programme. But there have been occasions when this assistance has been questioned. Kennedy’s administration was initially opposed to the idea

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<sup>22</sup> *ibid*

<sup>23</sup> *ibid*

<sup>24</sup> Hansard 22 October 2012, Col 684.

<sup>25</sup> Annual Chief of Staff Lecture, General Sir Nicholas Houghton, RUSI, 18 December 2013. [rusi.org](http://rusi.org)

# N U C L E A R F R E E S C O T L A N D

## 2020 VISION

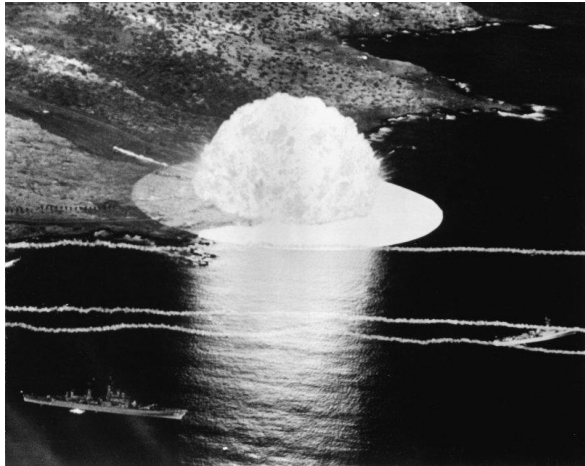


The Scottish Government have proposed that all nuclear weapons be removed from Scotland by 2020

Scottish independence is likely to result in there being no nuclear weapons in Britain.



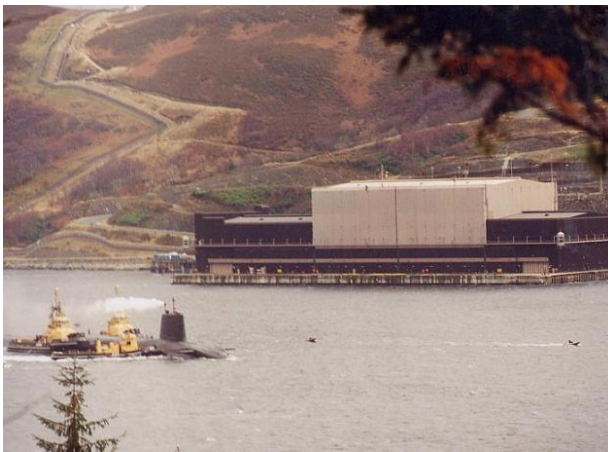
The basic safety problem with Trident is that the nuclear warheads are located around the third stage of the missile. The photo shows a Trident C4 missile. The arrangement with D5 is similar



This image shows a conventional explosion of 500 tonnes TNT equivalent. Operation Sailor Hat 1965.



**Royal Naval Armaments Depot Coulport**



Explosives Handling Jetty Cowlport  
(HMS Vanguard leaving the jetty after loading with nuclear warheads for the first time in December 1994)



Ready Issue Magazines Cowlport  
(The lorry with a container is transporting a nuclear warhead)

of Britain's bomb. The agreement to provide Harold Macmillan with Polaris went completely against the political judgement of the President. Kennedy described this decision as an original sin. It came about through the efforts of anglophile officials within his government and Macmillan's own charm.

When Harold Wilson was elected, the US State Department expected him to want to scrap Polaris. They prepared a briefing on how America could help Britain get out of the nuclear business. But Wilson abandoned the principles of his party, and continued the Polaris programme, so the State Department's notes were superfluous.

Although President Carter signed off the deal to provide Britain with Trident C4, he had not been keen on the arrangement.<sup>26</sup> Ronald Reagan, was a supporter of Margaret Thatcher and her acquisition of Trident D5. Despite this, the British embassy in Washington was worried that his successors would not be as helpful.<sup>27</sup>

During the Cold War US governments were more interested in Britain making a substantial contribution to conventional forces in Europe than in our nuclear capability. The possibility that the UK would scale back its army, navy and air force to pay for Polaris and Trident was a recurring concern in Washington. In recent years the White House has been eager to obtain British support in Iraq and Afghanistan. If faced with a choice, the US is likely to prefer that Britain pays to have troops on the ground rather than Trident.

It may be wrong to assume that the US would only allow Scotland to join NATO if Trident stayed on the Clyde. Washington will want Scotland to be inside the alliance and threatening to exclude it might well be counterproductive.

#### Responses from the rest of the world

Several months after the referendum, diplomats from around the world will gather at the nuclear Non Proliferation Treaty (NPT) conference in New York in May 2015. A major issue is likely to be a recent initiative from Non Nuclear Weapon States. Seizing on a reference in the 2010 NPT conference and the Red Cross's concern about the consequences of a nuclear explosion, a series of meetings have been held to explore the humanitarian impact of nuclear weapons. The first was hosted by Norway in 2013 and the second by Mexico in February 2014. Austria has volunteered to hold a third meeting later in 2014. The UK, US, France, Russia and China boycotted the first two conferences, but 127 nations were represented in Norway and 146 in Mexico. From these gatherings it is possible to detect that many Non Nuclear Weapon States are frustrated. They feel that not enough is being done to eliminate nuclear weapons and they are concerned that the issue cannot just be left in the hands of the nations which possess these weapons. There is growing interest in the proposal for a ban on nuclear weapons.

How will these nations respond if Scotland has voted Yes and there is a conflict of interests between a Scottish government seeking a constitutional ban on nuclear weapons and an rUK government which wants to keep all of its nuclear weapons on the Clyde? Some are likely to warmly welcome Edinburgh's approach and others would find it embarrassing if they try to criticise what the Scottish government sought to achieve.

There will be no unanimity within NATO. During the Cold War, NATO's nuclear strategy was a fudge, an uneasy compromise between the different approaches taken by alliance

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<sup>26</sup> "the 1980 agreement was concluded only after serious doubts on the part of President Carter himself had, with considerable difficulty, been overcome". Processing of UK Trident missiles in the US, British Embassy Washington, MJE Fretwell, 3 December 1981, TNA DEFE 24-2123 e21.

<sup>27</sup> "It would be unwise to assume that future US Administrations will necessarily take quite so positive an attitude". *ibid*

members. Today the alliance's dependence on nuclear weapons is itself disputed. Belgium, the Netherlands and Germany have all expressed an interest in removing the US nuclear weapons that are based in their countries. This stimulated a review of nuclear policy, but the study concluded, in May 2012, by confirming the existing tenets of the alliance's nuclear posture. Change in NATO policy is normally a very slow process. The alliance has a tendency to paper over cracks in order to retain consensus.

An independent Scotland which sought to be a nuclear-weapons-free member of NATO would present the alliance with a problem. There are members of NATO, such as Norway and Canada, who are proud of their right not to have nuclear weapons on their territory. It would be hard for them to deny Scotland a similar status. If there was a concerted move to say that Scotland must keep nuclear weapons if it wanted to join, this might upset the nations which have been trying to reduce the alliance's adherence to nuclear arms.

Walkers and Chalmers argue that there will be international pressure to find a middle way, between retaining Trident permanently at Faslane and its early removal from Scotland. However they add, "Whether that middle way exists will remain an open question until after (and if) the referendum delivers a yes vote."<sup>28</sup>

This "middle way" approach assumes that it is possible to bridge the gap between the MoD's requirement, for a 50 year lease on a Sovereign Base Area, with the proposal that the constitution of an independent Scotland includes a ban on nuclear weapons and that Trident is removed as quickly as safely possible. In practice the two are irreconcilable. There is no middle way.

## **Option 2 Move to England or Wales**

Malcolm Chalmers and William Walker looked in detail at relocation options in their book *Uncharted Waters: the UK, nuclear weapons and the Scottish question*. This concluded "it might be possible to relocate Trident, but only at great expense, after lengthy preparations and at considerable political cost".<sup>29</sup>

In January 2012 the Telegraph, quoted a MoD source as saying, "Berths would not be a problem – there are docks on the south coast that could be used without too much fuss. But there simply isn't anywhere else where we can do what we do at Coulport, and without that there is no deterrent."<sup>30</sup>

The Scottish Affairs Committee considered the issue in 2012. Walker and Chalmers both told the committee that finding a replacement for Coulport would be very difficult. Nick Harvey, Armed Forces Minister, said that relocating Trident was "the least favoured option".<sup>31</sup> He added, "It would be a very challenging project, which would take a very long time to complete and would cost a gargantuan sum of money". He told them, "probably you could find alternatives to Faslane for berthing submarines in England, but Coulport would

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<sup>28</sup> Will Scotland Sink the United Kingdom's Nuclear Deterrent? Malcolm Chalmers and William Walker, *The Washington Quarterly*, Summer 2013, p 119

<sup>29</sup> *Uncharted Waters: The UK, nuclear weapons and the Scottish question*, Malcolm Chalmers and William Walker, Tuckwell Press, 2001 <http://www.amazon.co.uk/Uncharted-Waters-Nuclear-Scottish-Question/dp/1862322457> p120.

<sup>30</sup> Nuclear subs will stay in Scotland, Royal Navy chiefs decide, *Telegraph*, 26 January 2012

<sup>31</sup> The Referendum on Separation for Scotland, Session 2012-13, Scottish Affairs Committee, Oral and written evidence, 17 July 2012. Ev 51

be very difficult.”<sup>32</sup> The Defence Secretary, Philip Hammond, said, “It would be technically possible to do so. If you throw enough money at a problem, you can solve most problems. I am confident that we would be able to solve this problem, but it would cost a significant amount of money”.<sup>33</sup>

A former commander of Faslane poured cold water on any plans to relocate. Rear Admiral Alabaster said, “it would be very difficult – in fact, I would almost use the word ‘inconceivable’ – to recreate the facilities necessary to mount the strategic deterrent, without the use of Faslane and Coulport, somewhere else in the UK.”<sup>34</sup>

The Committee concluded, “Identifying and recreating a suitable base to replace Faslane and Coulport would be highly problematic, very expensive, and fraught with political difficulties.”<sup>35</sup> Subsequently, in July 2013, a MoD source told Guardian – “the costs of moving out of Faslane are eye-wateringly high.”<sup>36</sup>

### Safety issues

The main problems with relocating Faslane and Coulport stem from the hazards associated with Trident nuclear missiles. The Trident D5 missile is powered by solid fuel. This fuel is high explosive, with a power equivalent to 70 tonnes of TNT.<sup>37</sup> A submarine carries 8 missiles, ie solid fuel equivalent to 560 tonnes of TNT. MoD risk assessments assume that the detonation of one missile will result in the explosion of all the missiles onboard.<sup>38</sup> The devastation from a conventional explosion of this scale was illustrated in Operation Sailor Hat (1965), a US experiment in which 500 tonnes of TNT were detonated to simulate the effect of a small nuclear blast. Ships anchored nearby were badly damaged.<sup>39</sup> The accidental detonation of Trident missiles would be a far greater hazard. MoD assessments assumes that all of the plutonium in all of the warheads would be dispersed. A submarine carries a total of around 160 kg of plutonium in its nuclear weapons. A US article on Trident safety recognised that there is also a risk of a low-yield nuclear explosion, but this is dismissed in MoD assessments.<sup>40</sup>

These submarines are also nuclear powered. The MoD’s fault trees show there is the potential for a complex accident involving both the missiles and the reactor. A missile explosion could result in the dispersal of radioactive material from the submarine’s power plant, but this is not taken into account in the published risk assessments.

The nuclear warheads are located in a circle around the third stage of the D5 missile. This

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<sup>32</sup> Referendum on separation for Scotland: Defence, Oral evidence before Scottish Affairs Committee, 12 September 2012.

<sup>33</sup> The defence implications of possible Scottish independence, Defence Committee, HC 198, September 2013, Ev 57

<sup>34</sup> The defence implications of possible Scottish independence, Defence Committee, HC 198, September 2013, Ev 20.

<sup>35</sup> The Referendum on Separation for Scotland, Session 2012-13, Scottish Affairs Committee, Oral and written evidence, 17 July 2012, p19

<sup>36</sup> MoD fears for Trident base if Scotland says yes to independence, Nicholas Watt, Guardian, 10 July 2013.

<sup>37</sup> US Government Bill of Lading GBL G-4432893, 1 September 1988, quoted in Trident D5 Missile Explosive Propellant Hazards, Glen Milner, Ground Zero Campaign, July 2001

<sup>38</sup> A Radiological Probabilistic Risk Assessment of the Faslane shiplift for Vanguard Class Submarines with Strategic Weapon System Embarked, AWE, 2000, and Accident Probability Assessment of Faslane Shiplift for Vanguard Class Submarines with Strategic Weapon System Embarked, 2000.

<sup>39</sup> Operation Sailor Hat 1965 US Navy video [http://www.youtube.com/watch?v=ZVM9\\_attO1Q](http://www.youtube.com/watch?v=ZVM9_attO1Q)

<sup>40</sup> Nuclear Weapon Safety: The case of Trident, John Harvey and Stefan Michalowski, Science and Global Security, 1994. [http://www.princeton.edu/sgs/publications/sgs/pdf/4\\_3harvey.pdf](http://www.princeton.edu/sgs/publications/sgs/pdf/4_3harvey.pdf) John Harvey later became a leading figure in the US nuclear weapons’ establishment.

means that there is a greater risk of a nuclear accident if the missile explodes.<sup>41</sup> The US Navy adopted this arrangement for the first time with Trident C4, to increase the range of the missiles. It was then used, for the same reason, on Trident D5. A major review of US nuclear weapon safety identified this as one of the major problems in the safety of the US nuclear arsenal.<sup>42</sup>

The safety case for the shiplift at Faslane shows that if a nuclear warhead collides with the third stage motor then there is a one-in-two chance that this will trigger a missile explosion. This is the MoD's "best estimate". Their "pessimistic estimate" of probability is one, i.e. it should be assumed that the missile will detonate.<sup>43</sup>

### Site selection

In *Uncharted Waters*, Chalmers and Walker explain how the MoD decided to base Polaris at Faslane.<sup>44</sup> The MoD considered five factors: (1) Ease of submarine operations; (2) Safety; (3) Logistics; (4) Ownership, development costs and planning permission; and (5) Overall cost. Chalmers and Walker suggest that a sixth factor should be introduced – the political risk at local, national and international level of pursuing particular options.<sup>45</sup>

Sites on the East coast of England were ruled out because they were too far from the deep water of the Atlantic where submarines could avoid detection. The focus was on the Celtic fringe - Scotland, Wales and Cornwall. Harland and Wolfe shipyard in Belfast was considered but was not a serious contender. For political as well as practical reasons it would not be pursued today. Sites on islands or remote locations were eliminated in 1963 because providing logistical support would be difficult.

The study shortlisted 10 sites for detailed consideration. Six were in Scotland. There was one site in Wales (Milford Haven) and three in England (Devonport, Falmouth and Portland).

A nuclear-armed submarine fleet needs two shore facilities. The first is a nuclear armaments depot to store and handle warheads and missiles. The second is a base to berth and support the submarines. Finding a suitable site for the depot is particular difficult.

### Nuclear armaments depot

When the MoD were considering where to put Polaris, their requirement was that the armaments depot should be 1.34 kilometres from any significant area of housing and 1.6 kilometres from the submarine base.<sup>46</sup> The original depot at Coulport, built on this basis, occupied an area of 128 hectares.<sup>47</sup>

By 1979 the MoD had tightened up the rules of the distance between explosives areas and housing and public roads. Coulport did not fully comply with the new regulations.<sup>48</sup> This

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<sup>41</sup> Harvey and Michalowsk op cit.

<sup>42</sup> Panel on Nuclear Weapons Safety of the House Armed Services, chaired by Sidney Drell (Drell report) 1990

<sup>43</sup> Accident Probability Assessment of Faslane Shiplift for Vanguard Class Submarines with Strategic Weapon System Embarked, 2000. Obtained by Scottish CND under FOI.

<sup>44</sup> *Uncharted Waters* Chalmers and Walker

<sup>45</sup> *Uncharted Waters* Chalmers and Walker

<sup>46</sup> Naval Ballistic Missile Force: Report of Working Party established by SMBA 5268, 25 February 1963, TNA ADM 1-28965 (Working Party Report); *Uncharted Waters* Chalmers and Walker.

<sup>47</sup> [http://hansard.millbanksystems.com/written\\_answers/1981/jul/14/trident-coulport-base](http://hansard.millbanksystems.com/written_answers/1981/jul/14/trident-coulport-base)

<sup>48</sup> "The rules for establishing protection from explosives by laying down 'quality distances' from such explosives – whether in magazines or process buildings – to inhabited buildings and public roads, were changed after the Coulport complex was constructed. As a result, waivers have had to be granted



was a problem, as the MoD looked at the implications of replacing Polaris with Trident. A second issue was that the new missiles would have more explosive power. The existing Polaris facilities would not be suitable.

Richard Mottram, Private Secretary to the Permanent Under Secretary at the MoD, pointed out that this was “one of the most difficult technical areas which we need to explore.”<sup>49</sup> Michael Quinlan, Deputy Under Secretary (Policy), said “we would face complex and perhaps very serious problems over accommodating it at Coulport with present explosives regulations”.<sup>50</sup> The MoD drew up a plan for new facilities to maintain as well as store Trident C4 missiles. This would mean expanding Coulport to 1067 hectares, eight times its original size.<sup>51</sup>

In 1982 Margaret Thatcher’s government opted to purchase the larger D5 missile instead of C4. The problems with Coulport increased. The government decided to transfer missile maintenance work to the United States.<sup>52</sup> Even though Coulport would no longer be overhauling missiles, the MoD still had to expand the depot to three times its original size, to store Trident missiles and nuclear warheads.

The key facilities are separate from each other and from public areas. The Explosives Handling Jetty (EHJ) at Coulport, which loads missiles and nuclear warheads onto submarines, is 800 metres from other facilities. Within the high-security Trident Special Area there are three compounds - Ready Issue Magazines for missiles, nuclear-warhead storage and a nuclear-warhead processing building. These three facilities are each 400 metres apart. The Ready Issues Magazines are a series of bunkers, each of which can take one Trident missile. The bunkers are 27 metres apart to reduce the risk that the detonation of one missile would result in the explosion of others.

Most of the logistical and support facilities in Coulport are more than 1 kilometre from the Trident Special Area and the EHJ. In addition to the large area of the base itself, there is a wider zone around it within which there are very few residential buildings.

In drawing up their long-term plans for nuclear weapons, the MoD assume that safety regulations may be tighter in future than they are today. The safety distances which lay behind the design of the Trident area at Coulport are likely to be a minimum. A new site would be storing fewer missiles and nuclear warheads than were envisaged when the Trident area at Coulport was designed. Nevertheless a large area would be required.

The Coulport depot today takes up an area of 364 hectares. It has 32 kilometres of internal roads and 30 kilometres of alarmed fence.<sup>53</sup> Allowing for the fact that the present site includes the old Polaris Special Area, a new depot would probably require around 300 hectares. This is equivalent to a rectangle of 1.5 kilometres by 2 kilometres.

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to enable some of the existing buildings to be used” Successor system to Polaris JF Howe DFA(P) 5 June 1979 TNA DEFE 24-2122 e28

<sup>49</sup> Nuclear Matters: Questions for the USA, Richard Mottram PS/PUS 6 July 1979 TNA DEFE 24-2122 e46

<sup>50</sup> Coulport and Successor Systems Michael Quinlan DUS(P) 11 July 1979 TNA DEFE 24-2122 e52

<sup>51</sup> [http://hansard.millbanksystems.com/written\\_answers/1981/jul/14/trident-coulport-base](http://hansard.millbanksystems.com/written_answers/1981/jul/14/trident-coulport-base)

<sup>52</sup> A detailed proposal to transfer Trident C4 missile maintenance work to the US had already been drafted. The only issue had been whether this would be an interim or permanent arrangement.

<sup>53</sup> [http://www.mod.uk/NR/rdonlyres/B1415470-BC8B-47E1-90C0-E206AF6748A0/0/tt133\\_dec07.pdf](http://www.mod.uk/NR/rdonlyres/B1415470-BC8B-47E1-90C0-E206AF6748A0/0/tt133_dec07.pdf)

When revisiting the alternative locations considered in 1963 it is important to bear in mind that a Trident depot would be more than twice the size of the Polaris depot that was originally envisaged, and that separation distances from inhabited areas would be greater.

### Trident Submarine base

Safety is a major consideration in the siting of the submarine base as well as the armament's depot. A support base would need a shiplift or drydock for submarine maintenance. Current practice is to lift fully-armed Trident submarines in the Faslane shiplift. The shiplift risk assessment reveals that a missile explosion is a possible accident at a Trident submarine base. This could lead to the dispersal of around 160 kilograms of plutonium and radioactive material from the reactor. In addition, Power Range Testing of reactors is carried out at the berths. A Trident submarine presents a particularly complex cocktail of risks. It combines high-explosive rocket fuel, nuclear warheads, torpedoes and a nuclear power plant.

### Greenfield sites

The only places which are seriously considered for new civil nuclear power stations are existing nuclear sites. Likewise the shortlist for the disposal of decommissioned submarines was narrowed down to existing defence nuclear facilities. It is highly questionable whether the MoD could successfully introduce nuclear weapons and nuclear submarines to a new site. In 1979, when drawing up their plans for Trident, the MoD had doubts about whether Coulport could be adapted for the new missile system.<sup>54</sup> Michael Quinlan said, "A new 'greenfield' site in the UK should I suggest, be assumed as a last (but not impossible) recourse."<sup>55</sup> Frank Cooper, Permanent Secretary at the MoD, replied that "while nothing is impossible, it is most unlikely that we would ever get agreement to a new 'greenfield' site in the UK".<sup>56</sup> He added that the MoD should not delude themselves into thinking that a greenfield site was acceptable.<sup>57</sup>

### Relocation Option 1 Devonport

At first glance, the most obvious alternative for Trident would be Devonport. Refits of Vanguard class submarines are carried out in the dockyard here and the naval base has been the home to Trafalgar class submarines, which are nuclear powered but not nuclear armed. The site is due to cease being an operational submarine base when the last Trafalgar class submarine leaves in 2017.

#### *Trident submarine base at Devonport*

In October 2012 the MoD admitted, in response to a Freedom of Information request, that the safety cases for Devonport Naval Base and Devonport Dockyard do not permit the berthing of a Vanguard class submarine if it is carrying Trident missiles. They also revealed that they have not carried out a detailed assessment of the risk of introducing Trident missiles into the base or dockyard. In January 2013 Scottish CND published their own assessment of the risks of this proposal, based on MoD documents and American government software which models the effects of nuclear weapons' accidents.<sup>58</sup> The MoD's

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<sup>54</sup> Successor system to Polaris JF Howe DFA(P) 5 June 1979 TNA DEFE 24-2122 e28

<sup>55</sup> Coulport and Successor Systems Michael Quinlan DUS(P) 11 July 1979 TNA DEFE 24-2122 e52

<sup>56</sup> Coulport and Successor Systems Richard Mottram PS/PUS 13 July 1979 TNA DEFE 24-2122 e53

<sup>57</sup> "We should not delude ourselves that showing the difficulties in all other alternatives will lead to the conclusion that a 'greenfield' site is acceptable". TNA DEFE 24-2122 e53

<sup>58</sup> Risk from Trident Missiles in Devonport, Scottish CND, January 2013

own regulations show that a missile explosion could result in residents receiving a lethal radiation dose of between 1 and 100 Sieverts if they are 1 kilometre from the submarine. There are over 4,000 people within this distance of the berths at Devonport. Scottish CND's computer modelling suggests that in average weather conditions there would be 800 additional long-term cancers and 16% of the city of Plymouth would be contaminated to an unacceptable level. There would also be casualties from blast damage. In calm conditions there could be as many as 11,000 long-term fatalities.

The Office of Nuclear Regulation (ONR) and the Defence Nuclear Safety Regulator (DNSR) are obliged to consider population density when assessing any new nuclear development. The MoD had been planning to reduce nuclear activity at Devonport. The current plan is that there will be no operational nuclear submarines at Devonport after 2017. Basing Trident here would not only reverse this trend, but would introduce an unacceptable new risk to the city of Plymouth.

A further problem with Devonport is that it is difficult for large submarines to access the base. The Trafalgar class submarines, which currently use the base, are much smaller than the Trident-armed Vanguard class. Vanguard class submarines enter and leave the port at the start and end of long refits. However, these journeys can only take place at high tide. Even in these tidal conditions, the channel is closed to all other shipping while the submarines enter and leave. These restrictions would be an unacceptable constraint at an operational Trident base.

#### *Nuclear warhead store at Devonport*

The problems with building a nuclear weapons store at Devonport would be even greater. The Nuclear Installations Inspectorate and their successors, the Office of Nuclear Regulation (ONR), have approved the development and continued use of nuclear refuelling facilities at Devonport. However they are aware that the siting of this nuclear facility in a major urban area is contrary to normal practice. It is inconceivable that the ONR would approve the construction of a new nuclear missile depot so close to a city.

In addition, the 1963 proposals for Polaris throw up a number of geographical issues. The MoD had been concerned that the proposed Polaris depot would be too close to the village of Wilcove. A larger Trident depot would take over the village, which would have to be abandoned. There would be further problems with the housing estate near HMS Raleigh, as this would be immediately next to the nuclear depot. A Trident nuclear warhead depot on this site is not viable, because there is not sufficient space for the required separation from housing and because of the very high population, 250,000, in the immediate area. The proposed site could not meet the 1963 criteria of maintaining a gap of 1.34 kilometres from residential property, far less today's requirements.

#### Relocation option 2 Falmouth

The 1963 proposal was to build a nuclear armaments depot near Penarrow Point and a submarine base on the opposite side of the estuary between St Just in Roseland and St Mawes.<sup>59</sup> Whereas the Polaris proposal would have taken up the land around Penarrow Point, a Trident armaments depot would swallow up the whole peninsular, including the villages of Mylor Churchtown and Flushing. The depot would also extend to the West, towards Penryn and Mylor Bridge.

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<http://www.banthebomb.org/images/stories/pdfs/RiskfromTridentmissilesinDevonport>

<sup>59</sup> Working Party Report as outlined in *Uncharted Waters* Chalmers and Walker

The depth of the Fal estuary restricts where it would be possible to build the Explosives Handling Jetty and submarine berths. There is deep channel which zig-zags across the estuary.<sup>60</sup> The key facilities would be sited where this channel is close to the shore, South of Penarrow Point on the Western shore and near St Just in Roseland on the Eastern shore.

#### *Nuclear warhead store at Falmouth*

The population of Falmouth, around 20,000, is similar to Helensburgh, the nearest town to Faslane. However, whereas Helensburgh is 7.4 kilometres from the Faslane shiplift and 8 kilometres from Coulport, Falmouth would be only 500 metres from the boundary of the nuclear warhead depot.

In addition to the explosives safety zone, there would be a wider area within which there would be preplanned countermeasures for a nuclear accident. This would extent to 2 kilometres from the nuclear facilities in the depot and would include a large part of Falmouth. The proximity to the town would almost certainly rule out building a nuclear warhead depot on the site proposed in 1963.

The Explosives Handling Jetty (EHJ) would be 800 metres South East of Mylor Churchtown. The missile and warheads buildings would be a similar distance from the village. Mylor Churchtown is a significant sailing centre with 400 pleasure craft at the marina and nearby moorings. It is home to Restronguet Sailing Club, where the triple-Olympic Gold medallist Ben Ainslie learned to sail. The EHJ and bunkers would be so close that the village and surrounding area would have to be evacuated. Many of the houses between Mylor Churchtown and Mylor Bridge could no longer be inhabited. People living in Flushing would also have to leave their homes.

At Coulport there is a Restricted Area of water 700 metres from the shore and a Protected Area 250 metres from the shore. Pleasure craft which sail close to the nuclear depot are intercepted by MoD Police patrol boats and warned to keep clear. If a similar zone was imposed around a nuclear depot in the Fal estuary then it could affect 581 moorings in Falmouth Harbour.

There is currently a major plan to redevelop Falmouth harbour. It includes the construction of a terminal for cruise liners. There are proposals to dredge the approach to the harbour as part of this plan.<sup>61</sup> It has been suggested that this may be a Government initiative to prepare Falmouth for Trident. However the scheme was initiated prior to 2008, well before Whitehall was giving serious attention to the impact of Scottish independence on Trident. The development of a cruise liner terminal is not compatible with building a nuclear warhead store. It would place thousands of passengers within a few hundred metres of a nuclear site.

Falmouth has its employment problems, but Trident would not provide the answer. Tourism, particularly watersports, is a major part of the local economy. The loss of 1,000 pleasure craft would be a significant blow to the area, complemented by the blight of a nuclear weapons' base.

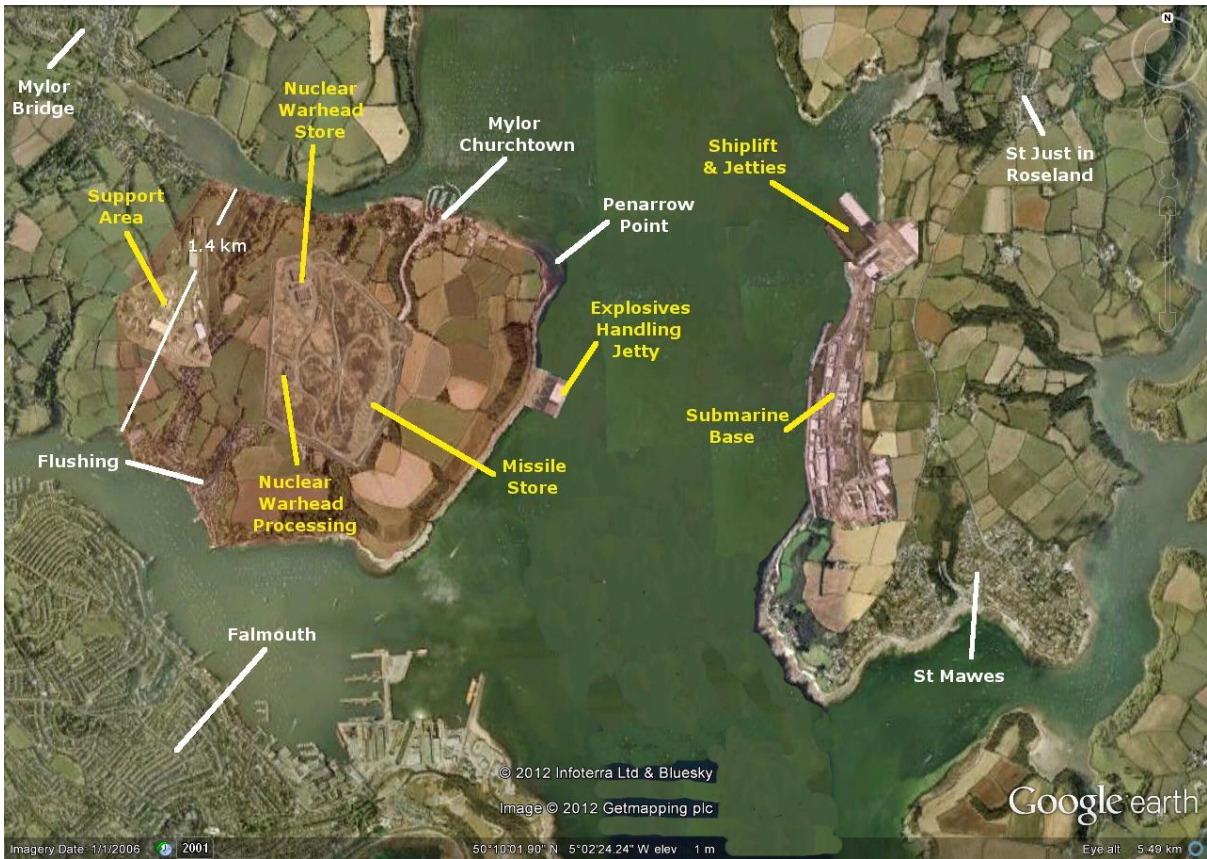
#### *Submarine base at Falmouth*

The 1963 proposal was to build the Polaris submarine base on the Eastern shore of the estuary, North of St Mawes, with a floating dry-dock close to St Just in Roseland. This section of coast is owned by the National Trust, as part of their commitment to protect the British coastline. Officials in the MoD assumed that the National Trust would object to their

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<sup>60</sup> <http://www.visitmyharbour.com/viewchart.asp?chart=16D26C3458CF22320>

<sup>61</sup> The dredging plans have been criticised because of their impact on the marine environment.



**Falmouth**

This shows the facilities at Coulport and Faslane superimposed on a satellite image of Falmouth estuary. The location of facilities is based on the 1963 projections for Polaris but the areas required for Trident are larger.



Mylor Churchtown, Falmouth estuary



### Milford Haven

This superimposes the facilities at Coulport and Faslane on a satellite image of Milford Haven estuary. The locations of the submarine base and warhead depot are based on the 1963 proposals for Polaris. These are outlined in orange and labeled in yellow. The oil and gas facilities are shown in purple.



Milford Haven



HMS Repulse in Walney Channel in 1965. The Polaris submarine ran aground after being launched. The extensive sandbanks around Barrow are one reason why the site would not become an operational base.

proposals for Polaris and that there would be public backing for the Trust's stance. This was a significant factor in their elimination of the Falmouth option. The MoD were also concerned that the Duchy of Cornwall, which owns all the foreshore and some of the land, might also block their proposal.

#### Relocation option 3 Devonport and Falmouth

Faced with the difficulty of finding a suitable site for a nuclear armaments depot in Devonport, the 1963 review considered the possibility of combining Devonport and Falmouth. Devonport could house the submarine base and Falmouth the nuclear armaments depot.

A two-base option for Trident was supported by Dr Jeremy Stocker, a Commander in the Royal Navy and associate fellow at the Royal United Services Institute. In his evidence to the House of Commons Defence Committee in 2006 he said: "If the [nuclear deterrent] had to be relocated, the only viable base is Devonport, with a new RN Armament Depot probably at Falmouth."<sup>62</sup>

In 1963 the MoD rejected this arrangement because it would "stretch to an unacceptable degree the requirement for proximity of the operating base and the RNAD".<sup>63</sup> They insisted that the armaments depot should be within one hour's sailing of the submarine base. Falmouth is 70 kilometres West of Devonport. It would be very difficult to sustain continuous patrols if the armaments depot is far from the submarine base.

If Falmouth was only to become a nuclear warhead store, then the area would be faced with the blight of hosting nuclear weapons and the loss of a large area of land, without the jobs associated with a submarine base.

In addition to the practical problems of operating from two sites, there would be significant safety concerns, as identified above, with both basing Trident submarines at Devonport and with building a nuclear weapon store at Falmouth.

For the above reasons, there are major problems with the Devonport-Falmouth option.

#### Relocation option 4 Portland (Weymouth)

Portland Naval base was on the shortlist for a base for Polaris.<sup>64</sup> It was ruled out because the MoD could not find any suitable site for a nuclear weapons depot.

The naval base closed in 1995 and the neighbouring Naval Air Station shut down 4 years later. The former Naval Air Station has been redeveloped as Osprey Quay with new residential, commercial and the UK national sailing centre which hosted the 2012 Olympics.

There is not enough suitable land on the site of the old Naval base for a Trident submarine base. It would also take over the site of the old Naval Air Station. This would mean demolishing the Osprey Quay development. There are both new and older residential properties in this area. Some would fall within the boundaries of a new nuclear base and others would be immediately adjacent to it.

The Portland option is even less viable today than it was in 1963. The key facilities are no longer owned by the MoD. The proximity of residential areas means that this would not be a viable site for a Trident base.

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<sup>62</sup> <http://www.publications.parliament.uk/pa/cm200607/cmselect/cmdfence/ucwhite/ucm402.htm>

<sup>63</sup> Working Party Report as outlined in Uncharted Waters Chalmers and Walker.

<sup>64</sup> Working Party Report as outlined in Uncharted Waters, Chalmers and Walker

### Relocation option 5 Milford Haven

The one Welsh site on the 1963 shortlist was Milford Haven. The proposals were to build a nuclear missile depot to the East of Shore Point and to transform the MoD mine depot at Newton Noyes into a submarine base. At the time Esso had just established one oil refinery in the area. The MoD concluded that Polaris and the refinery were incompatible, on safety grounds. The only way that the submarines could be accommodated would be if the oil terminal was closed.

In 2012 Welsh First Minister Carwyn Jones said that he would welcome Trident to Milford Haven if it left Scotland. His stance was criticised, not only by Plaid Cymru but also by Welsh Labour Assembly Members and MPs. In January 2013 the MoD said they had not looked into the safety of basing Trident at Milford Haven.

Today Milford Haven has two terminals which offload Liquefied Natural Gas (LNG) from tankers. These handle 30% of the UK's gas supply. In addition there are two oil refineries and a large tank farm. These process 25% of Britain's petrol and diesel.

The proposed submarine base would be next to one of the LNG terminals and the tank farm. Submarines would pass within 250 metres of three petrochemical. An explosion on a tanker or jetty handling LNG or oil could develop into a nuclear incident, because of the risk that it could trigger a fire or explosion on a submarine. In addition, an explosion on a submarine could trigger a petrochemical blast.

It would not be possible to base Trident here while the oil and gas facilities were functioning. Closing the petrochemical plants would have a major impact on the British economy. So putting Trident in Milford Haven is not a viable option.

### Relocation option 6 Barrow

Nuclear submarines have been built at Barrow since the 1960s. Nevertheless, the site did not make it onto the 1963 shortlist, because is not a suitable location for an operational submarine base. Walney Channel is too shallow. In 2005 the RAND Corporation carried out a detailed investigation into the possibility of fuelling nuclear submarines at Devonport rather than Barrow. This would have meant towing newly-built vessels between the two dockyards. The RAND report explains the tidal problems in Walney Channel. There are a limited number of hours in each month when the tide is high enough for a submarine to transit the Channel into the open sea. Even at these restricted times the vessel has to travel faster than 8 knots to complete the journey in the short window available.<sup>65</sup>

Tidal problems are not an abstract issue. The second Polaris submarine to be built at Barrow, HMS Repulse, ran aground in Walney Channel when it was launched on 11 November 1967. A further problem with Barrow is the proximity of any facility to the town itself.

### Support ship

The US Navy deployed depot ships to the Holy Loch in Scotland and Rota in Spain to support Polaris nuclear submarines. These vessels handled both missiles and warheads. In addition missiles and warheads were transported between the US bases and these forward locations by USNS Marshfield and USNS Victoria.

In the 1960s Britain contemplated deploying Polaris submarines to the Far East, supported

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<sup>65</sup> The United Kingdom's Nuclear Submarine Industrial Base, Volume 3 Options for Initial Fuelling, R Raman et al, RAND Corporation for the Ministry of Defence, 2005



by a similar depot ship.<sup>66</sup> In 1979 USNS Victoria became surplus to requirements following the withdrawal of Polaris from Rota. The MoD considered buying the vessel and converting it into a depot ship. Their plan was to base Victoria at Loch Striven with a complement of missiles and warheads. A significant motivation for this proposal was the Ministry's fear of industrial action at Coulport. After a brief review they decided not to purchase the vessel.

The MoD might contemplate acquiring a floating depot for Trident and then deploying it either in Britain or abroad. There is no direct precedent for this as the US Navy never built a depot or transport ship capable of handling the large Trident D5 missile.

Moving the base offshore might appear to circumvent restrictive safety regulations, however this would not be as easy as it might appear. Any plans would need the approval of US authorities, which might not be forthcoming because the risks of an accident on a floating facility are significantly higher than on shore. Mating Trident warheads and missiles is a problematic process and carrying it out on a ship may not be acceptable. The safety requirements for moving armed Trident missiles could probably not be met on a support vessel.

The MOD might think they could evade scrutiny from the Office of Nuclear Regulation (ONR) by using a depot ship. However ONR could not be completely excluded. Current practice would suggest that the berth of a support ship would be regarded as a nuclear site for the purposes of the REPIR regulations, which are supervised by ONR. The Defence Nuclear Safety Regulator (DNSR) might not be as rigorous as an independent regulator, but it is hard to imagine them permitting the handling of Trident missiles and nuclear warheads on a depot ship, in a restricted space and subject to the elements. It would be impossible to build large contained spaces capable of preventing the simultaneous detonation of missiles and warheads, or to have a modern design which would reduce the risk of the dispersal of radioactive material. Moving Trident support offshore would be a return to a 1960s approach to nuclear and explosives safety.

### **Option 3. Relocating Trident to the US or France**

#### General points

There are three problems which undermine the American and French basing options. The first is the Non Proliferation Treaty (NPT). Article 1 of the treaty says. "Each nuclear-weapon state party to the treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosives devices directly, or indirectly".

This means that if British nuclear weapons were operating from a base in the United States or France they would have to remain under absolute British control at all times. The MoD might be tempted to think that they could save money by using American or French facilities. However, if they are to comply with the Treaty, they would have to construct duplicate buildings. This would clearly be the case with regard to the magazines and process buildings for nuclear warheads and the Ready Issue Magazines for armed missiles. The principle could also be extended to missile handling facilities. Currently the Explosives Handling Jetty at the US King's Bay depot from time to time loads unarmed Trident missiles onto British submarines. However, it does not handle British nuclear warheads.

The second issue is dependence. The value of British nuclear weapons as a symbol of

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<sup>66</sup> Polaris 1964-66 TNA DEFE 13-350

greatness is bound up with perceptions that the force is independent from foreign control. This is to a large degree a myth. Faslane only keeps 12 months' supply of certain key missile components. This dependence would be brought to the fore if the fleet was based overseas.

The third factor is the public response in the host country. Accommodating the nuclear weapons of a foreign power would be controversial. Obtaining consent would prove even more difficult than in the UK. The UK government response to the Scottish Affairs Committee summarised these problems, "Operations from any base in the USA or France would greatly compromise the independence of the deterrent and there would be significant political and legal obstacles."<sup>67</sup>

### Relocation to USA

In 1980 the Thatcher government agreed to purchase the Trident C4 missile system from the United States. The following year officials concluded that there was no long term future for C4 and that Britain should purchase the larger D5 missile. One consequence of this change was that the costs of Trident would far exceed the initial budget. So the MoD considered how to reduce expenditure. One big item was the expansion of Coulport. Officials proposed two options. The first was to move missile servicing work from Coulport to the US. This was agreed and is current practice. The second, more radical option was to move both missile and nuclear warhead work from the Loch Long depot to the United States. Routine servicing of warheads and mating of warheads with missiles would have taken place in America, as this description of the proposal shows,

"(a) To transfer missiles with warheads from SSBNs to US storage and processing facilities; and back to the SSBNs, (b) To mate and demate the warheads and missiles on US soil, (c) To test the warheads and replace lifed items, (d) To transfer warheads, in transit containers, from the US to UK, for surveillance, update and repair, and to replace them with others for outloading to our SSBNs."<sup>68</sup>

Officials pointed out that all work would have to be under UK control, to comply with the NPT:

"As this would imply actual work on the warheads, unless the whole operation were under British control at all times, it could be regarded as contravening the Treaty's provisions."<sup>69</sup>

The British Embassy in Washington gave their view on compliance with the NPT and the likely American response:

"since warheads would be involved, rather than, as previously, missiles without warheads, we should, prima facie, appear to be sailing closer to the wind in terms of Article I than has hitherto been the case (and there certainly are those in Congress who would see such an arrangement in that light)".<sup>70</sup>

There was concern that the arrangement might not comply with the US Atomic Energy Act 1954 which precludes the US from exporting nuclear warheads to other countries. The

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<sup>67</sup> The Referendum on Separation for Scotland: Terminating Trident—Days or Decades?: Government response to the Committee's Fourth Report of Session 2012-13, Scottish Affairs Committee, House of Commons, 8 January 2013

<sup>68</sup> Trident: Processing D5 missiles in the US, M Gainsborough, 20 November 1981, TNA DEFE 24-2123 e6

<sup>69</sup> Trident: Processing D5 missiles in the US, TNA DEFE 24-2123 e6

<sup>70</sup> Processing of UK Trident missiles in the US, MJE Fretwell, British Embassy Washington, 9 December 1981 TNA DEFE 24-2123 e21

Embassy felt that there could be problems over safety and control of warheads.

The US Defence Secretary Casper Weinberger was sympathetic. But, the Embassy said the proposal was likely to run into some opposition:

“there are others who are less well disposed and who in due course will begin to question to what extent it is in the US interest to enable us to continue to maintain an ‘independent’ nuclear capability so heavily reliant on US facilities.”<sup>71</sup>

The discussion on this issue reveals the considerable extent of dependence in any case:

“it may be that much harder to convince the sceptics that the system remains in a real sense ‘independent’ when the warheads themselves are stored, loaded and off-loaded in the United States. Although there is in real terms a substantial measure of dependence now, it would be hard to counter the impression that the maintenance, operation and even the continued existence of the UK deterrent were increasingly becoming matters within the discretion of the US government of the day.”<sup>72</sup>

These files show that the Royal Navy only maintains sufficient spares to sustain the Trident system for 12 months.<sup>73</sup> There are a number of vital missile components, in the guidance and flight control systems, which are replaced on a regular basis.<sup>74</sup> These can be accessed from inside the submarine. The UK only holds one year’s supply of these parts. Whether based in Britain or the United States, the UK cannot continue to operate its nuclear weapons for more than 12 months if Washington withdraws its support. The Government was concerned that basing the fleet in the US would affect the perception of independence. Handling British nuclear warheads at King’s Bay would raise public and international awareness of the extent of dependence. It would also result in discussions in Congress which were best avoided.

In January 2013 the UK Government acknowledged that King’s Bay did not provide an easy solution. A report to the Scottish Affairs Committee said, “to use facilities at King’s Bay in Georgia USA would present a complex logistic and cost challenge”.<sup>75</sup> Journalist Elaine Grossman interviewed US naval expert Norman Polmar about the possibility of operating the British fleet from King’s Bay. She wrote: “Polmar said the logistics of basing British submarines at King’s Bay would be so challenging as to rule out the option entirely.”<sup>76</sup>

Any review of future locations for the UK Trident fleet is likely to include this “US-basing” option. Financial savings would be an illusion, given the need to build unique British facilities on an American site. Moving to an American base would raise awareness, in Britain, America and around the world, of how the British force is dependent on US support.

The Trident base at King’s Bay Georgia is spread over a large area. However, it would still be difficult to find space for separate UK nuclear warhead and missile storage, because of the need for spacing between explosives facilities. The bunkers are surrounded by a clear

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<sup>71</sup> Processing of UK Trident missiles in the US, TNA DEFE 24-2123 e21

<sup>72</sup> Processing of UK Trident missiles in the US, TNA DEFE 24-2123 e21

<sup>73</sup> “the Duff/Mason criterion of aiming to be able to maintain an independent capability for at least one year” Trident: Processing D5 missiles in the US, TNA DEFE 24

<sup>74</sup> “the critical factor so far as our dependence on the US is concerned is the repair of certain spares for the strategic weapon system, and that this is likely to be as true of D5 as it is of Polaris”. MISC7: Strategic Nuclear Independence, D Brennan, DS17, 13 November 1981, TNA DEFE 24-2123 e5. Also DEFE24-2123 e6

<sup>75</sup> Government response to Scottish Affairs Committee Terminating Trident—Days or Decades

<sup>76</sup> US lawmakers eye basing submarines at US port if expelled by Scots, Elaine Grossman, Global Security Newswire, 31 October, 2012

area which varies between 700 and 1000 metres in width. The Explosives Handling Jetties are 2 kilometres from these bunkers.

The Department of Defence is considering how far to trim back their proposals for a new fleet of nuclear-armed submarines. If numbers are substantially reduced, they may decide to close their Atlantic facility and operate all the submarines from Bangor, Washington State, where the majority are currently based. Were this to happen, the only US option for Britain would be to base the Royal Navy's Trident fleet on the Northern fringes of the Pacific Ocean.

#### Relocation to France

On 2 November 2010 two new defence agreements between the UK and France were announced. One of these is for a joint nuclear weapon's research establishment at Epure. The two countries will share hydrodynamic test facilities, but they will keep the data from their experiments separate. There have been calls for Britain to consider coordinating nuclear patrols with France, as a way to reduce the number of submarines required. These suggestions of closer collaboration follow the embarrassing collision between Le Triomphant and HMS Vanguard on the 3<sup>rd</sup> February 2009.

It might be possible to expand Anglo-French nuclear cooperation by asking Paris to host the British nuclear fleet. French submarines, together with their missiles and nuclear warheads are handled in a compact site at Ile Longue in Brittany. This base for the Force de Frappe lacks the separation distances between facilities which are found at British and American nuclear submarine sites.

British Vanguard class submarines are longer, wider, deeper and have a larger displacement than the Triomphant class. The Trident D5 missile is longer than its French equivalent, M51. French safety clearance for British submarines, missiles and warheads would require the transfer of classified American information, including on reactor design, which the US has so far withheld from Paris. The UK Government said, in its submission to the Scottish Affairs Committee, "the appropriate facilities do not exist in France."<sup>77</sup>

The UK and France would be in breach of the NPT if UK nuclear warheads were handled in French buildings. But, there is no space on the Ile Longue peninsula for the separate British facilities that would be required. The only way to accommodate Trident in France would be for the UK to build a new submarine base and nuclear armaments depot.

Taking Trident across the Channel would highlight one of the underlying reasons for Britain having nuclear weapons. At several key points in the history of the British nuclear weapons' programme an important factor was concern that if Britain gave up its nuclear arms then France would be the only nuclear-weapon state in Western Europe. This was considered by many in the British establishment to be intolerable. Although less frequently said, this remains a factor today. Moving Vanguard class submarines to Brittany would also mean that the British nuclear force was dependent on the support of both the American and the French Governments.

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<sup>77</sup> The Referendum on Separation for Scotland: Terminating Trident—Days or Decades?: Government response to the Committee's Fourth Report of Session 2012-13, Scottish Affairs Committee, House of Commons, 8 January 2013

#### **Option 4 Alternative nuclear systems**

In theory the MoD could decide to replace ballistic-missile submarines with an alternative type of nuclear weapon system, if sustaining Trident became impossible because of Scottish independence. However, in July 2013 the UK government's Trident Alternatives Review argued that there were major problems with every potential alternative to ballistic-missile-submarines.<sup>78</sup> Cruise missiles, which had been considered the most likely alternative, are effectively dismissed on the grounds that Aldermaston would not be able to produce a suitable warhead until 2040. If cruise missiles were to be launched from submarine torpedo tubes then the warhead would not be available until 2050, because this would require a low radiation warhead.

The report concludes that, if a cruise missile system was adopted, the MoD would have to build two new ballistic-missile submarines to bridge the gap between the retirement of the current Vanguard class and the availability of the new system. It argues that a cruise missile system would end up being more expensive, but less capable. In the event of Scottish independence and a cruise missile solution, Trident would stay at Faslane for 24-34 years, to be replaced by a system that cost more, with less power than three or four new ballistic-missile-submarines.

#### **Option 5 Disarmament**

The Scottish Affairs Committee in the House of Commons has acknowledged that unilateral nuclear disarmament would be an inevitable consequence of independence, if a Scottish government pursued current SNP policy and insisted on the speediest safe removal of Trident.<sup>79</sup> Lord West, former First Sea Lord, told the BBC that a Yes vote could "effectively lead us into unilateral disarmament."<sup>80</sup> James Arbuthnot, Chair of the Defence Committee, said that unilateral disarmament should be considered, if Scotland becomes independent. Rear Admiral John McAnally, former Commandant of the Royal College of Defence Studies, said "If Britain were expelled from Faslane, there is every possibility that it could be forced into unilateral nuclear disarmament".<sup>81</sup>

In June 2012 Scottish CND published a report which argued that the Trident nuclear weapon system could be put beyond use within 7 days, that all nuclear warheads could be removed from Scotland within 2 years and that they could all be dismantled within 4 years.<sup>48</sup> This timescale was described as reasonable by leading American nuclear-weapons' experts Dr Bruce Blair and Professor Richard Garwin.

The Scottish Affairs Committee of the House of Commons said:

"Nuclear weapons in Scotland could be disarmed within days and removed within months. We accept the analysis of Scottish CND that, with the cooperation of the Navy and the UK

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<sup>78</sup> Trident Alternatives Review, Cabinet Office, 13 July 2013

<sup>79</sup> The Referendum on Separation for Scotland: Terminating Trident – Days or Decades? Scottish Affairs Committee, HC 676, 23 October 2012.

<sup>80</sup> Today, BBC Radio 4, 30 December 2011.

[http://www.huffingtonpost.co.uk/2011/12/30/independence-would-devastate-defence-industry-ex-navy-chief-warns\\_n\\_1176216.html](http://www.huffingtonpost.co.uk/2011/12/30/independence-would-devastate-defence-industry-ex-navy-chief-warns_n_1176216.html)

<sup>81</sup> Scotland will be powerless to defend itself, John McAnally, Telegraph, 17 March 2014

<http://www.telegraph.co.uk/news/uknews/scotland/10701689/Scotland-will-be-powerless-to-defend-itself.html>

Government, this process would be both speedy and safe".<sup>82</sup>

The Scottish Government's response was:

"We are firmly committed to the earliest possible withdrawal of Trident from Scotland .... The suggested timetable is a welcome indication of how quickly Trident could be removed once Scotland has the powers to decide its own defence and security policy".<sup>83</sup>

The removal of Trident might be even more rapid. If the appearance of an independent anti-nuclear Scotland was imminent, then the London government might well remove all nuclear weapons from Scotland prior to independence. Washington might insist that the American-built missiles and the nuclear warheads, which contain American components, were removed from Faslane and Coulport, and not left on the territory of an actively anti-nuclear sovereign state.

British nuclear disarmament is a possible outcome of Scottish independence. Given the serious problems with the other options, it is the most likely result of a Yes vote.

It is wrong to suggest that if Britain abandoned Trident this would have no effect on the rest of the world. On the contrary, it could break the logjam and lead to wider progress towards nuclear disarmament. Faced with a nuclear-free UK, France would have to reassess whether it should continue with its expensive nuclear programme. The combination of British disarmament and the new impetus towards a nuclear ban, from Non Nuclear States, could have a significant global impact.

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<sup>82</sup> The referendum on Separation for Scotland: Terminating Trident – Days or Decades, Scottish Affairs Committee, House of Commons, Fourth Report of Session 2012-13, 25 October 2012.

<sup>83</sup> Sunday Herald 17 June 2012.



