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## **Warhead convoy movements summary 2021**

The log below is based principally on observations by Nukewatch, but complemented by deduction as to the purpose of each convoy journey and whether or not warheads were carried. Nukewatch retains detailed logs, in many cases supported by photographic and video evidence, to document observations of each convoy movement.

Nukewatch considers that during 2021 at least five loaded convoys travelled between the Coulport nuclear arms depot in Scotland and the Atomic Weapons Establishment (AWE) at Burghfield in Berkshire, and at least seven loaded convoys travelled in the opposite direction. We estimate that between nine and fifteen nuclear warheads were returned to AWE and between twelve and forty-two warheads dispatched to Coulport. Our best estimate is that fifteen warheads were returned to AWE and twenty-one were dispatched to Coulport.

The picture of convoy movements during the year represents a broadly similar level of activity when compared with activity over the past five years. The number of convoys carrying nuclear weapons during 2020 is similar to last year, but is substantially higher than the annual number of such convoys in the first part of the 2020s, when operations were conducted at the baseline level necessary to allow the movement of nuclear weapons for maintenance and surveillance purposes.

During 2021, as with the previous five years, a net surplus of warheads was delivered to Coulport when compared with the numbers returned to the Atomic Weapons Establishment. These observations are consistent with a programme of manufacturing and deployment of new Mark 4A Trident warheads to replace the original Mark 4 model and the manufacture of new warheads to meet the raised UK Trident warhead ceiling announced in the 2021 Integrated Review of Security, Defence, Development and Foreign Policy.

### **Special Nuclear Materials (SNM) convoys**

The Ministry of Defence also transports special nuclear materials and high security cargoes in the same vehicles that are used to move nuclear warheads. Nukewatch has observed two likely movements of these convoys. One SNM convoy was observed undertaking a round trip between AWE Aldermaston and RNAD Coulport in June / July, possibly transporting warhead tritium bottles. A second convoy was observed in October, possibly transporting nuclear materials between AWE Burghfield and AWE Aldermaston.

Nukewatch does not monitor all SNM convoys, and further unmonitored SNM convoys are likely to have also made journeys over the year.

A convoy exercise activity is thought to have taken place in September.

### **Impact of COVID-19 pandemic**

To limit transmission of the COVID-19 virus, England was placed under a 'stay at home' lockdown over the period 4 January – 29 March, with non-essential movement prohibited. In Scotland, lockdown arrangements restricting travel other than locally were in force over the period 4 January – 26 April.

Three warhead convoy movements took place over the period of the English and Scottish lockdowns, apparently in conflict with the Scottish government's 'stay local' travel guidance and with UK government guidance advising people to respect rules issued by the relevant devolved administration with regard to travel. High levels of coronavirus infections were recorded in Argyll and Bute district, in which RNAD Coulport is situated, in December 2020 - January 2021.

Throughout the year all convoy monitoring by Nukewatch was conducted in compliance with government COVID safety guidelines.



| Trip purpose   | Date Out          | Date In           | From            | To                           | Load    | No. trucks | Route |
|----------------|-------------------|-------------------|-----------------|------------------------------|---------|------------|-------|
|                | Tues<br>21.09.21  | Tues<br>21.09.21  | AWE Aldermaston | AWE Burghfield               | Unladen | 4          |       |
| 3 Trident up   | Mon<br>27.09.21   | Tues<br>28.09.21  | AWE Burghfield  | RNAD Coulport                | Loaded  | 4          | A1    |
| 3 Trident down | Mon<br>04.10.21   | Tues<br>05.10.21  | RNAD Coulport   | AWE Burghfield               | Loaded  | 4          | A1    |
|                | Fri<br>08.10.21   | Fri<br>08.10.21   | AWE Burghfield  | AWE Aldermaston              | Unladen | 4          |       |
|                |                   |                   |                 |                              |         |            |       |
|                | Thurs<br>25.11.21 | Thurs<br>25.11.21 | AWE Aldermaston | AWE Burghfield               | Unladen | 4?         |       |
|                | Wed<br>01.12.21   | Wed<br>01.12.21   | AWE Burghfield  | AWE Aldermaston <sup>6</sup> | Unladen | 4?         |       |
|                |                   |                   |                 |                              |         |            |       |

**Notes to table:**

- <sup>1</sup> Convoy vehicles believed to have remained at AWE Burghfield for next trip, without returning to their base at AWE Aldermaston.
- <sup>2</sup> Journey made as dispersed vehicles, not travelling in convoy.
- <sup>3</sup> Continuous run with no overnight stop.
- <sup>4</sup> Vehicles travelled in convoy formation and were believed to have been carrying special nuclear materials.
- <sup>5</sup> Convoy known to have left AWE Burghfield but was observed halted at M4 Junction 12. Details of journey and return trip unknown.
- <sup>6</sup> Journey to Coulport believed to have been cancelled at short notice, possibly as the result of adverse weather during Storm Arwen or industrial action at RNAD Coulport.

Trident up: The indicated number of Trident warheads was believed to have been transported from the Atomic Weapons Establishment for handover to the Royal Navy at RNAD Coulport.

Trident down: The indicated number of Trident warheads was believed to have been transported to the Atomic Weapons Establishment for inspection / maintenance / refurbishment.

SNM: Convoy believed to have been carrying special nuclear materials or other sensitive material associated with the Ministry of Defence's nuclear programmes.

Exercise: Convoy believed to have been participating in an exercise, training initiative, or convoy operating procedures inspection.

Vehicle return: Convoy vehicles returning to their home base empty and individually, rather than together in convoy formation.

**IF YOU SEE A CONVOY PLEASE RING ONE OF THESE NUKEWATCH NUMBERS AS SOON AS POSSIBLE:**

South: 0345 45 88 364  
North: 0345 45 88 365  
Mobile: 07796 226 488  
Mobile: 07790 409 339

We need to know what you saw, when you saw it, where, and what direction the convoy vehicles were travelling in.

For more information please see the Nukewatch website at [www.nukewatch.org.uk](http://www.nukewatch.org.uk)

# Overview of the United Kingdom's nuclear weapons programme during 2021

## *Introduction and context*

The United Kingdom (UK) was one of the original participants in the Manhattan Project to build the first atomic weapon, and has been a nuclear armed state since 1952. The nation's nuclear weapons programme has become increasingly technologically dependent on the United States of America, and since 2010 the UK has also co-operated with France on nuclear warhead science.

Under the terms of the 1962 Nassau Agreement, one of the conditions for American support for the UK's programme is that the UK's nuclear weapons are assigned to NATO's nuclear forces and could only be used independently when supreme national interests are at stake. The UK does not have a policy of no-first use, deeming such a posture to be incompatible with NATO's nuclear doctrine.

The UK did not participate in negotiations on the Treaty on the Prohibition of Nuclear Weapons and the government has categorically stated that it will not sign or ratify the Treaty.<sup>1</sup> The Prime Minister has specifically directed the Secretary of State for Defence to "ensure the long-term viability of our nuclear deterrent",<sup>2</sup> and the extensive modernisation programmes for the UK's nuclear weapons systems are an indication of the country's intention to retain nuclear weapons indefinitely, contrary to its disarmament obligations under the Non-Proliferation Treaty and despite its claim that it is committed to the long-term goal of a world without nuclear weapons.<sup>3</sup>

## *Current status*

UK nuclear doctrine and policy was revised during the year and is published in the 2021 Integrated Review of Security, Defence, Development and Foreign Policy, 'Global Britain in a competitive age'.<sup>4</sup> The UK's sole nuclear weapons system is the Trident system, based around the submarine launched Trident D5 missile procured from the USA. The missiles are deployed on four Vanguard class submarines, one of which is constantly on patrol while two others are working up to or recovering from patrol, with the fourth undergoing refit. As part of the Integrated Review the government announced that it would increase the UK's nuclear warhead stockpile from less than 225 warheads to no more than 260 warheads. Observations of warhead convoy movements undertaken by UK Nukewatch since 2016 suggest that this increase had largely been achieved by the time the Integrated Review was published.<sup>5</sup>

The Integrated Review announced that the government would no longer publish figures for the UK's operational stockpile, deployed warhead or deployed missile numbers.

## *Modernisation*

In July 2016 the UK Parliament reaffirmed its decision to replace the Trident-armed Vanguard class submarines,<sup>6</sup> which are currently intended to leave service by the early 2030s (significantly beyond their original design life). The successor submarine, known as 'Dreadnought', entered the design phase in 2011

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<sup>1</sup> Foreign and Commonwealth Office: 'The Non-Proliferation Treaty remains essential to maintain peace and security'. Statement by Ambassador Jonathan Allen, UK Deputy Permanent Representative to the UN, at the Security Council briefing on the Non-Proliferation Treaty, 26 February 2020. <https://www.gov.uk/government/speeches/the-non-proliferation-treaty-remains-essential-to-maintain-peace-and-security>

<sup>2</sup> Chief of the Defence Staff Speech to the Royal United Services Institute. 7 December 2021.

<sup>3</sup> 'Global Britain in a competitive age: The Integrated Review of Security, Defence, Development and Foreign Policy'. HM Government, 16 March 2021. P78.

<sup>4</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/975077/Global\\_Britain\\_in\\_a\\_Competitive\\_Age\\_the\\_Integrated\\_Review\\_of\\_Security\\_Defence\\_Development\\_and\\_Foreign\\_Policy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/975077/Global_Britain_in_a_Competitive_Age_the_Integrated_Review_of_Security_Defence_Development_and_Foreign_Policy.pdf)

<sup>5</sup> 'Global Britain in a competitive age: The Integrated Review of Security, Defence, Development and Foreign Policy', op cit. P76-78.

<sup>6</sup> 'UK nuclear warhead numbers and the Integrated Review. A technical note by Nukewatch UK'. 10 April 2021.

<https://www.nukewatch.org.uk/wp-content/uploads/2021/04/UK-warhead-numbers-and-the-Integrated-Review.pdf>

<sup>7</sup> Rowena Mason and Anushka Asthana: "Commons votes for Trident renewal by majority of 355". The Guardian, 18 July 2016.

<https://www.theguardian.com/uk-news/2016/jul/18/mps-vote-in-favour-of-trident-renewal-nuclear-deterrent>

and the programme is currently in delivery phase 2, which will run until March 2022<sup>7</sup>. Work is now under way on construction of the first two of the four planned new submarines and procurement of long lead items for the last two submarines has commenced.<sup>8</sup> £1.9 billion was spent on the Dreadnought programme during the 2020-21 financial year, and to date a total of £10.4 billion has been spent.<sup>9</sup>

The Ministry of Defence anticipates that the first submarine will enter into service in the early 2030s (postponed from an earlier target date of 2024) but has been deliberately vague on a precise date.<sup>10</sup> The intention is for the new submarines to remain in service until the 2060s. The new vessels will be the largest submarines ever constructed for the Royal Navy and will each have 12 missile tubes. This leaves open the possibility that the number of missiles carried could be increased.<sup>11</sup> The submarines will be powered by a new third generation pressurised water reactor (PWR3), which is being developed by Rolls-Royce Submarines with US support and is believed to be similar to the S9G reactor which powers the US Navy's Virginia class submarines.<sup>12</sup>

The Trident warhead, although UK built, is believed to be similar to the US W76 warhead and contains a mixture of UK and US elements. This warhead is being upgraded to a new Mk4A specification and the Mk4A version will be in service until the 2040s. The modernised warhead will have a new arming, fuzing, and firing system, which will enhance its capability and make it more effective against hardened targets. Evidence from UK Nukewatch based on the monitoring of warhead convoy movements indicates an update in operating tempo since 2016, suggesting that production of the Mk4A warhead is under way and that newly manufactured warheads are being delivered to the Royal Navy for entry into service.<sup>13</sup> Nukewatch considers that the three Vanguard class submarines available for operational deployment have now been loaded with Mk4A warheads.

In February 2020 Admiral Charles Richard, commander of US Strategic Command, told the Defence Committee of the US Senate that work on the proposed new W93 warhead “will also support a parallel replacement warhead programme in the United Kingdom”.<sup>14</sup> Responding to events, the Secretary of State for Defence, Ben Wallace, shortly afterwards notified the UK Parliament of the government's intention to replace the existing Trident warhead.<sup>15</sup> Before this announcement the Atomic Weapons Establishment (AWE) had already conducted research into development of a future warhead and over £100 million had been spent on technology studies to support refurbishment of the current system and explore options for a future warhead.<sup>16</sup> The new UK warhead is intended to be integrated with the US-supplied Mark 7 aeroshell and delivered in parallel with the US W93/Mk7 warhead programme. At present the programme to deliver the new warhead is in its preliminary phases and the Ministry of Defence has indicated that a replacement warhead “is not required until at least the late 2030s, possibly later.”<sup>17</sup>

The United States is extending the life of the D5 Trident weapon system, updating all the Trident subsystems: launcher, navigation, fire control, guidance, missile, and re-entry.<sup>18</sup> The UK is participating in this life extension programme and the US will supply the UK with upgraded Trident D5LE missiles, modernised fire control and navigation systems, and spare missiles to support the UK's stock entitlement. Deployment of the life-extended missiles on UK Vanguard class submarines is believed to be under way and Nukewatch

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<sup>7</sup> 'The United Kingdom's future nuclear deterrent: The 2021 update to Parliament'. Ministry of Defence, 16 December 2021. <https://www.gov.uk/government/publications/the-united-kingdoms-future-nuclear-deterrent-the-2021-update-to-parliament/the-united-kingdoms-future-nuclear-deterrent-the-2021-update-to-parliament>

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

<sup>10</sup> John Ainslie, 'The Trident Shambles', Scottish CND, March 2016.

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

<sup>11</sup> Ibid.

<sup>12</sup> Julian Turner: 'Deep impact: inside the UK's new Successor-Class nuclear submarine'. Naval Technology, 29 July 2013.

<https://www.naval-technology.com/features/feature-nuclear-submarine-successor-uk-royal-navy/>

<sup>13</sup> 'UK nuclear warhead numbers and the Integrated Review. A technical note by Nukewatch UK'. Op cit.

<sup>14</sup> Jamie Doward: 'Pentagon reveals deal with Britain to replace Trident'. Observer, 22 February 2020.

<https://www.theguardian.com/uk-news/2020/feb/22/pentagon-gaffe-reveals-uk-deal-replace-trident-nuclear-weapon>

<sup>15</sup> 'Nuclear Update:Written statement - HCWS125'. 25 February 2020.

<https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2020-02-25/HCWS125/>

<sup>16</sup> 'Trident'. Parliamentary Written Answer 122607, 23 January 2018.

<https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2018-01-15/122607>

<sup>17</sup> National Security Strategy and Strategic Defence and Security Review 2015, op. cit., p35.

<sup>18</sup> Statement of Rear Admiral Terry Benedict, Director Strategic Systems Programs, Subcommittee on Strategic Forces of the Senate Armed Services Committee, 9 February 2016.

[https://www.armed-services.senate.gov/download/benedict\\_02-09-16](https://www.armed-services.senate.gov/download/benedict_02-09-16)

considers that at least one, and possibly more than one, Vanguard submarine has been loaded with D5LE missiles. The life extension programme for the D5 will only sustain the missile until the early 2040s; thus the UK government has acknowledged that “investment in a replacement ballistic missile would eventually be needed.”<sup>19</sup>

Almost all of the UK’s infrastructure for deploying, developing and building nuclear weapons is being rebuilt or refurbished.<sup>20</sup> £1.5 billion will be spent over the next ten years to upgrade the Trident submarine base at Her Majesty’s Naval Base Clyde; a £300 million programme is under way to construct new facilities at the BAE Systems shipyard at Barrow-in-Furness where the Dreadnought submarines will be built, and around £1.8 billion has been allocated to construct a new Core Production facility at the Rolls-Royce factory in Raynesway, Derby, where PWR3 reactor components will be produced. The Nuclear Warhead Capability Sustainment Programme, a long term infrastructure upgrade programme, has been under way at the Atomic Weapons Establishment since 2005 and new joint Anglo-French hydrodynamic research facilities for warhead research work are under construction at Valduc in France under the auspices of Project Teutates.<sup>21</sup>

### *Budget*

The forecast cost of the Ministry of Defence’s nuclear enterprise for the financial year 2021-22 was £6.5 billion, around 14 per cent of the department’s budget.<sup>22</sup> This includes procuring and supporting submarines (including nuclear powered but non-nuclear armed submarines as well as nuclear armed submarines), missiles and warheads, propulsion systems, nuclear-related infrastructure, and managing the enterprise. The figure is a significant increase on the 2018 figure of £5.2 billion published by the National Audit Office.<sup>23</sup>

Replacing the Trident submarines is expected to cost £31 billion.<sup>24</sup> Another £10 billion has been put aside to cover any extra costs or spending over this estimate. In addition, extending the life of the current Trident missiles into the early 2040s will cost around £350 million.<sup>25</sup> Keeping the current Trident submarines in operation until the early 2030s, a period significantly longer than planned when they were first built, is also expected to cost between £1.2 and £1.4 billion.<sup>26</sup>

The annual operating costs of Trident are expected to consume about 6% of the defence budget, currently equating to about £2.2 billion.<sup>27</sup> In addition to this, a further £20 billion will be spent on operating and rebuilding the Atomic Weapons Establishment over the period 2000 – 2025.<sup>28</sup>

### *Perspective*

Despite efforts to address weaknesses in safety performance and programme management which have dogged the UK’s military nuclear programme over the past decade, the programme remains in a fragile state.

The Infrastructure and Projects Authority’s annual report on government major projects indicated that there had been no improvement in the status of four major nuclear projects over the previous year. The Clyde infrastructure, Core Production Capability, and Dreadnought programmes were all assessed at an ‘amber’ rating, meaning that they face “significant issues”. The Astute submarine programme was rated as amber-

<sup>19</sup> 'The United Kingdom’s Future Nuclear Deterrent: The Submarine Initial Gate Parliamentary Report', Ministry of Defence, May 2011. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/27399/submarine\\_initial\\_gate.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/27399/submarine_initial_gate.pdf)

<sup>20</sup> Ministry of Defence: 'The United Kingdom's Future Nuclear Deterrent: The Dreadnought Programme. 2017 Update to Parliament', op cit.

<sup>21</sup> Nuclear Information Service: 'AWE: Britain's Nuclear Weapons Factory. Past, Present, and Possibilities for the Future', June 2016. <https://www.nuclearinfo.org/sites/default/files/AWE-Past%2C%20Present%2C%20Future%20Report%202016.pdf>

<sup>22</sup> 'Nuclear Power and Nuclear Weapons: Costs'. Parliamentary Written Answer UIN HL262, 1 June 2021. <https://questions-statements.parliament.uk/written-questions/detail/2021-05-17/HL262#>

<sup>23</sup> 'The Defence Nuclear Enterprise: a landscape review'. National Audit Office, 22 May 2018. <https://www.nao.org.uk/report/the-defence-nuclear-enterprise-a-landscape-review/>

<sup>24</sup> National Security Strategy and Strategic Defence and Security Review 2015, op. cit., p37.

<sup>25</sup> Ministry of Defence: 'The United Kingdom's Future Nuclear Deterrent: The Dreadnought Programme. 2017 Update to Parliament, op cit.

<sup>26</sup> 'Replacing the UK’s ‘Trident’ Nuclear Deterrent,' House of Commons Library, 11 July 2016, <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7353>.

<sup>27</sup> 'Replacing the UK’s strategic nuclear deterrent: progress of the Dreadnought class'. House of Commons Library, 31 January 2018. <http://researchbriefings.files.parliament.uk/documents/CBP-8010/CBP-8010.pdf>

<sup>28</sup> Nuclear Information Service: 'AWE: Britain's Nuclear Weapons Factory. Past, Present, and Possibilities for the Future, op cit., p18.

red, meaning that “successful delivery of the project is in doubt”. The Ministry of Defence withheld all information on the status of a fifth project, the Nuclear Warhead Capability Sustainment Programme at the Atomic Weapons Establishment,<sup>29</sup> although the department has informed the Chair of the House of Commons Public Accounts Committee that Project Pegasus, an element of the Nuclear Warhead Capability Sustainment Programme relating to construction of an enriched uranium store and manufacturing plant, will exceed current financial approvals.<sup>30</sup>

The Office for Nuclear Regulation (ONR) once again determined that the Atomic Weapons Establishment sites and the Devonport Royal Dockyard, where submarine refit work takes place, would remain under a regime of “enhanced regulatory attention” because of persistent safety issues at these sites.<sup>31</sup> In November 2020 the Ministry of Defence responded to long-standing concerns about performance at the Atomic Weapons Establishment by announcing that it had terminated its contract with the private sector consortium AWE Management Ltd for the management and operation of Establishment. New operating arrangements came into force in July 2021 when the Atomic Weapons Establishment became a Non-Departmental Public Body wholly owned by the Ministry of Defence.

As of December 2021 HMS Vanguard had been out of service for 72 months undergoing an unscheduled second long overhaul and refuel at Devonport dockyard – by far the longest refit yet undertaken for any of the Royal Navy's nuclear armed submarines. Issues with maintenance at the Faslane submarine base have reportedly reduced the availability of another of the Vanguard class submarines, HMS Victorious, placing the burden of at-sea patrols on just two submarines and requiring patrols of extended duration.<sup>32</sup>

Over recent months the Ministry of Defence has made concerted efforts to roll back the transparency of its nuclear programmes. As stated above, the government announced that it would no longer publish figures for the UK's operational stockpile, deployed warhead or deployed missile numbers on publication of the Integrated Review. The Ministry is also conducting a security review of historic files relating to the United Kingdom's Nuclear Weapons programme and a large number of archived files have been withdrawn from general access while the review is under way.<sup>33</sup>

Since 2016 the Ministry of Defence has refused to publish the annual report from its Defence Nuclear Safety Regulator (DNSR) on nuclear safety assurance, raising further questions about transparency and safety performance in the military nuclear programme. Staffing and resource issues have placed DNSR's ability to continue to provide safety assurance to current standards at risk.

Ministry of Defence nuclear convoys experienced a number of high-profile unscheduled motorway stops in 2021:

8 May: M898 near Erskine Bridge.

29 June: M6 near Keele Services (local fire service in attendance).

8 September: Near M4 Junction 12.

4 October: M74 South of Hamilton.

Nukewatch has placed requests for information about the reasons for these incidents under the Freedom of Information Act with the Ministry of Defence, but the Ministry has refused to provide further details. Nukewatch considers that the most likely cause for these halts is breakdown of a convoy vehicle. In September new convoy protected escort vehicles came into service to replace older vehicles which had been prone to breakdowns.

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<sup>29</sup> 'Annual Report on Major Projects 2020-21'. Infrastructure and Projects Authority, 15 July 2021. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1002310/IPA\\_AR2021\\_final\\_14Jul.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002310/IPA_AR2021_final_14Jul.pdf)

<sup>30</sup> 'Project Pegasus Accounting Officer Assessment'. Ministry of Defence, 10 March 2021. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/978941/20210310\\_-\\_NWCSP\\_\\_Pegasus\\_\\_AOA.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/978941/20210310_-_NWCSP__Pegasus__AOA.pdf)

<sup>31</sup> 'Chief Nuclear Inspector's annual report on Great Britain's nuclear industry'. Office for Nuclear Regulation, October 2021. P21. <https://www.onr.org.uk/documents/2021/cni-annual-report-2021.pdf>

<sup>32</sup> Lucy Fisher: 'Repairs left two in four Trident subs out of action'. The Times, 1 April 2020. <https://www.thetimes.co.uk/edition/news/repairs-left-two-in-four-trident-subs-out-of-action-07jkwgtbj>

<sup>33</sup> 'Review of nuclear archive records'. Ministry of Defence, 12 January 2021. <https://www.gov.uk/government/publications/review-of-nuclear-archive-records>

Industrial action took place at Faslane and Coulport over fire safety cover in November<sup>34</sup> and in November and December at Coulport over pay arrangements for staff working for the ABL consortium.<sup>35</sup> In September contractors working on the Project Mensa construction project at AWE Burghfield took industrial action over blacklisting of staff, including a union health and safety representative.<sup>36</sup>

During the year supply chain issues posed added complications to the UK's military nuclear enterprise, with the Ministry of Defence being forced to take steps to acquire Sheffield Forgemasters, a critical supplier of steel components for the Dreadnought submarine programme which has faced long-term financial difficulties.<sup>37</sup> Serco, one of the companies involved in operating the Atomic Weapons Establishment before it was brought back under government control, announced that it was abandoning plans to bid for contracts at the Establishment because of pressure from ethical investors.<sup>38</sup> The Ministry of Defence's annual report on progress with the Trident replacement programme acknowledges "challenges in some parts of the supply chain"<sup>39</sup> and looking to the longer term it is possible that supply chain issues may emerge as a further source of cost pressure on the UK's nuclear weapons programme.

### *Impact of COVID-19*

The Ministry of Defence acknowledges that the Covid-19 pandemic has had an impact on the delivery of its future nuclear programme, although activity at industrial facilities and offices is said to be close to pre-Covid output.<sup>40</sup>

Despite cleaning, hygiene, quarantining, and isolation measures to minimise the risks from Covid-19 to submarine crews, the Faslane submarine base was reportedly the worst Covid hotspot in Scotland in December 2020, with the impacts persisting into February 2021.<sup>41</sup>

Dozens of crew members on board submarine HMS Vigilant reportedly fell ill at sea with Covid during a patrol at the beginning of the year when the Royal Navy took a "calculated risk" to continue with the patrol after a sailor showing Covid symptoms was taken off the submarine the day it set sail.<sup>42</sup>

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<sup>34</sup> 'Capita Defence Fire and Rescue boss grilled over HMNB Clyde jobs row'. Helensburgh Advertiser, 10 December 2021. <https://www.helensburghadvertiser.co.uk/news/19772468.capita-defence-fire-rescue-boss-grilled-hmnb-clyde-jobs-row/>

<sup>35</sup> 'Strike action to start next week that could 'cripple' Clyde nuclear base'. Daily Herald, 9 December 2021. <https://www.heraldsotland.com/news/homenews/19772953.strike-action-start-next-week-cripple-clyde-nuclear-base/>

<sup>36</sup> 'Unite takes on the union-busters'. Union News, 25 September 2021. <https://www.union-news.co.uk/unite-takes-on-the-union-busters/>

<sup>37</sup> 'UK Government to acquire Sheffield Forgemasters International Limited'. Ministry of Defence, 28 July 2021. <https://www.gov.uk/government/news/uk-government-to-acquire-sheffield-forgemasters-international-limited>

<sup>38</sup> 'Ethical investors block bid for nuclear weapons contracts'. Sunday Telegraph, 6 November 2021. <https://www.telegraph.co.uk/business/2021/11/06/ethical-investors-block-bid-nuclear-weapons-contracts/>

<sup>39</sup> 'The United Kingdom's future nuclear deterrent: The 2021 update to Parliament'. Op cit.

<sup>40</sup> Ibid.

<sup>41</sup> 'Coronavirus: Faslane outbreak is worst Covid-19 hotspot in Scotland'. Helensburgh Advertiser, 12 December 2020. <https://www.helensburghadvertiser.co.uk/news/18939636.coronavirus-areas-scotland-covid-cases/>

'Confirmed COVID Cases in Argyll and Bute Remain Stubbornly High'. NHS Highland, 12 February 2021. <https://www.nhshighland.scot.nhs.uk/News/Pages/ConfirmedCOVIDCasesinArgyllandButeRemainStubbornlyHigh.aspx>

<sup>42</sup> "Hell" at sea: Sailors on Royal Navy nuclear submarine come through 'patrol from hell' after Covid outbreak at sea'. The Sun, 12 February 2021. <https://www.thesun.co.uk/news/14036051/sailors-navy-nuclear-sub-covid-outbreak/>