*Cold War History*
Vol. 10, No. 3, August 2010, 287–314

Routledge
Taylor & Francis Group

# The British Labour Government and the development of Chevaline, 1974–79

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*Between 1974 and 1979 the British Labour Government, led first by Harold Wilson and then by James Callaghan, developed a programme of improvements to the British Polaris Submarine Launched Ballistic Missile (SLBM) system initiated during Wilson's first government between 1964 and 1970. This Polaris improvement programme was known from 1974 onwards as Chevaline. Chevaline offered Britain an indigenous solution to meet the 'Moscow Criterion' – the requirement that British strategic missiles had to be capable of penetrating Moscow's 'Galosh' Anti-Ballistic missile defence system (ABM) even in the absence of US support. This came during a time of economic austerity in a changing strategic environment which led Labour to explore nuclear cooperation with the French. It also led to calls from within the party to renounce nuclear weapons through unilateral disarmament. This article will shed fresh light on the bitter internal debates that ensued and how a select band of senior ministers responded to this dilemma.*

When Labour again returned to power in February 1974 after a four year absence, Britain's Polaris Submarine Launched Ballistic Missile (SLBM) system had been fully deployed, with the last submarine, *Revenge*, going on its first patrol in September 1970. However, there were already doubts about whether Britain's Polaris force would be able to maintain its ability to overcome the 'Moscow Criterion' over the long term.[1] As early as 1967 serious research to improve Britain's Polaris missiles against the threat

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ISSN 1468-2745 print/ISSN 1743-7962 online

DOI: 10.1080/14682741003679375
http://www.informaworld.com

posed by Soviet anti-ballistic missiles (ABMs) had begun within a programme known from 1974 onwards as *Chevaline*. ABMs, particularly nuclear interceptors which detonated outside of the atmosphere, could potentially incapacitate the relatively small number of missiles the British had at their disposal – perhaps as few as the 16 missiles on a single submarine operating as a Continuous At-Sea Deterrent (CASD). X-rays were the biggest danger but Chevaline, through a combination of 'hardening' (shielding the missile front-end and warheads from X-rays and other effects) and the deployment of a 'threat tube' (through chaff, penetration aids and decoys) of 100 miles or more through the atmosphere could defeat the Soviet ABM system.[2]

The perceived need to improve Polaris rested on the assessments of the UK's Joint Intelligence Committee (JIC) and the Chiefs of Staff (COS). They believed that for Britain's nuclear deterrent to be credible it had to be able to 'assure destruction' of any potential target and for this reason the 'Moscow Criterion' had to be met. Their judgements were the fundamental parameter on which Britain evaluated its ability to carry out its national commitments in circumstances where Britain might not be able to count on allied support. Britain's alliance commitments to NATO were not an overriding feature of this debate.

Although the previous Conservative government of Edward Heath had been prepared to press ahead with the development of Chevaline, its value had yet to be proven to the new Labour government. Between 1974 and 1979 the Labour government also undertook discussions with the French government of Valéry Giscard d'Estaing concerning joint development of theatre and non-strategic nuclear weapons. This Anglo-French dialogue gives a good indication of the growing debates within NATO surrounding nuclear weapons. Concurrently, a second round of Strategic Arms Limitation Talks (SALT) were taking place between the superpowers. This article will pose three main questions: a) What difficulties did the Labour government face with Chevaline? b) What impact did détente and SALT have on Labour policies? c) What consideration was given to nuclear cooperation with France?

There already exists a considerable literature on the British nuclear deterrent in the period between 1945 and 1964, but considerably less has been written on the period from 1964 onwards. This is due in large measure to the continuing secrecy surrounding nuclear weapons and the retention of British government documents under the 'Thirty Year Rule'. The 2000 Freedom of Information Act has altered this situation a great deal.[3] This article will begin to fill this deficit using newly released primary evidence from the British National Archives (TNA) and also through correspondence and interviews with senior figures closely involved in the development of UK nuclear weapons policy.[4] This new evidence will provide a more solid foundation for those seeking to understand the nuclear policies of what Peter Hennessy terms the 'Secret State'.[5] It will be shown that despite continuing restrictions on the release of information concerning nuclear weapons, enough information is finding its way into the public domain that historians can begin to assess this key area of the Cold War.[6] This is the case both at the national level and broader multilateral levels.[7]

## The Labour Party and the bomb

As in his previous government, newly restored Labour Prime Minister Harold Wilson still had to contend with vocal unilateral disarmament proponents in his party who wanted to see Britain renounce its nuclear deterrent.[8] Although the Conservatives had considered making the Chevaline project public, under Labour the issue of improvements to Polaris missiles continued to be conducted with the highest levels of secrecy.[9] Unlike the Conservatives, Wilson and his most senior colleagues had to tread a fine line between internal politics and preserving national security interests with the party discordant on the nuclear issue with members such as Frank Allaun holding a staunchly anti-nuclear position.[10]

Just as in Wilson's first government, the JIC, COS and technical advisors at the various nuclear research establishments were continuing to make the case for improving Polaris in the face of recent Soviet defensive developments.[11] This placed the Labour government in a difficult position. How should they respond to the threat posed by Soviet ABMs to the effectiveness of Polaris without disaffecting sections of their own party? The new government also had to contend with continuing the improvement programme within the context of détente and the ongoing Strategic Arms Limitation Talks between America and the Soviet Union.[12]

To coordinate government policy, Labour was quick to support the continuation of the long-standing Ministerial Committee on Nuclear Policy (MCNP). This committee had been formed in September 1966 and was an executive inner Cabinet committee made up of the Prime Minister and three or four senior ministers, and which dealt exclusively with matters of nuclear policy. This permanent committee was the most influential of all the various bodies associated with British nuclear weapons policy and it helped provide a high level coordination for the various proposals to improve Polaris.[13]

The committee during this period was made up of Prime Minister Wilson, Foreign Secretary James Callaghan, Home Secretary Roy Jenkins, Chancellor of the Exchequer Denis Healey, Secretary of State for Energy Eric Varley and the Secretary of State for Defence Roy Mason. Its remit was 'To keep under review the Government's nuclear policy'.[14] It was to be staffed with a permanent secretariat containing Sir John Hunt, Secretary to the Cabinet, H.P.T. Smith, Robert Press, the government's Assistant Chief Scientific Advisor (ACSA) and J. Roberts of the Cabinet Office.[15]

As the executive political authority for British nuclear weapons development this body was ultimately responsible for the maintenance of the country's nuclear deterrent posture as their decisions were not placed before the Cabinet for discussion. The problem of balancing the protection of the country's nuclear capabilities against an increasingly vocal left wing of unilateral disarmers was a key issue confronting the MCNP.[16] Throughout these discussions the Chiefs of Staffs' 'Moscow Criterion' remained at the heart of the improvement debate and was the central plank of the *independent* British nuclear targeting plan.[17] However this was not simply a fixation with attacking the Soviet capital. As Sir Michael Quinlan states:

> the 'Moscow criterion' did not rest just on a narrow obsession with assailing the city itself, but reflected the fact that the characteristics of the Soviet ABM system meant that abandoning the attempt to be seen as capable of defeating it would have entailed conceding effective sanctuary to a very large area around the city – its exact size and configuration depending on the precise azimuth and elevation of the incoming attack ... in the order of tens of thousands of square miles.[18]

For planning purposes 7–10 Soviet cities including Moscow and Leningrad (the two most populous cities of the USSR) were to be targeted with a minimum level of destruction of 50 per cent.[19] Outside of Moscow and Leningrad, the remainder of these 7–10 cities had to have populations exceeding 300,000. These were the assumptions for independent strategic nuclear targeting by the British Polaris force.[20]

These targeting plans, which were translated onto computer targeting tapes aboard British ballistic missile submarines (SSBNs) along with separate NATO target sets was complicated by the fact that a maximum of two Resolution class SSBNs with 16 Polaris missiles with three warheads on each which were housed in Manoeuvrable Re-entry Vehicles (MRVs) – making a total of 48 – were available at any given time, although a third could be brought to readiness for firing during a prolonged crisis.[21] Even within the limits set by the 1972 ABM Treaty, and the 1974 protocol (the 'Vladivostok Accords'), only the Chevaline programme's improvements to Polaris missiles (or America's next generation submarine launched missile – *Poseidon*) could guarantee the penetration of Moscow ABM defences through to the 1990s when Polaris would be coming to the end of its operational life.

By 1974 the internal debates amongst senior advisors in the Ministry of Defence (MoD), Treasury and Cabinet Office regarding whether and how British deterrent capabilities should be improved had been already decided upon by the Conservatives.[22] This debate had centred on whether it would be best to mount an indigenous improvement programme to build a future deterrent with the French or to purchase a second generation system from the Americans based upon the technology in their new Poseidon missiles. Whether to proceed with this programme was to prove a problematic issue for the Labour government to resolve.

After four years of internal debates during the Conservative government, it had been eventually decided by senior members of the Heath government to continue with the development of the largely indigenous *Super Antelope* modification for Polaris.[23] This project was granted a new official codename – Chevaline.[24] When Labour returned to power, armed with only a small majority, they stalled on proceeding at full speed with the improvement programme due in large measure to the domestic economic difficulties they faced and the potentially divisive effects it could have on the Labour Party. Instead they hedged by authorising Chevaline funding for only six months through a process known as 'drip funding'.[25] Although the project continued, Labour still faced many difficulties in deciding whether to fund it through to completion given the changing strategic and political environment and the rampant economic inflation plaguing Britain.

Labour's 1964 commitment not to develop a new generation of nuclear weapons to replace Polaris was the main reason why the Super Antelope upgrade programme was

initiated in 1967 and why British nuclear policy took the course it did in Wilson's first government.[26] This commitment was reinforced in Labour's 1974 manifesto, and for this reason the improvement programme continued following the general election of October 1974[27] much as it had before; in secret and with little or no discussion among the full Cabinet.[28]

Although Chevaline did not aim to develop a new generation of nuclear weapons, it was nevertheless prudent for Labour to proceed slowly and cautiously with the programme, avoiding potential embarrassment and damaging splits in a party with a vocal unilateralist wing. Furthermore in the absence of a large majority in Parliament the Labour frontbench could not afford to alienate backbench MPs who could exercise considerable influence on government policy.[29] These intra-party problems greatly contributed to the decision not to proceed with Chevaline at full speed.

The small Ministerial Committee on Nuclear Policy did not discuss cancelling Chevaline at this stage. Instead, following the initial six-month funding period, £46.5m was allocated to allow the work to continue for an additional year while a full defence review, promised during the general election was being conducted.[30] The review, ordered by Secretary of State for Defence Roy Mason on his first day in office in March 1974, was planned to begin 'first with a reconsideration of the UK's defence commitments'.[31] However 'pre-empting this was a government decision that defence spending should drop from around 5% of GDP to around 4.5% over ten years'.[32] This decision rested on the belief that the UK's defence spending should move towards the NATO average. Rationalising this planned reduction of defence costs was an important consideration for Labour in the context of Chevaline and its strategic necessity. There was also the need to carry forward the 'special nuclear relationship' with the United States through the Mutual Defence Agreement (MDA) of 1958 and Polaris Sales Agreement (PSA) of 1963. Both depended on a UK contribution to high level nuclear research, which had atrophied during the past decade. As such there was much to be considered on both the domestic and international political fronts.

If Tony Benn's[33] account of Chevaline development is accurate then Wilson indicated to members of the wider Cabinet that there was only 'a little bit of modernisation going on'[34] to the tune of £24m a year.[35] Yet if Wilson's official biographer, Philip Ziegler, is to be believed, 'unless he was both gullible and monstrously misinformed, he [Wilson] must have known that a great deal more than "a little bit of modernisation" was in question'.[36] Wilson, having been properly briefed, knew full well the implications of Chevaline even though he probably had only a limited understanding of the advanced technologies involved.[37] In disguising the full extent of the planned upgrade Wilson inhibited an informed discussion in Cabinet of the future direction of Chevaline and during the next two years costs escalated. The Treasury was particularly concerned about these cost escalations and only authorised expenditure in three and six monthly rolling cycles.[38] However, the extent to which the Treasury exercised independent control over such a secret project, deemed essential for Britain's national security, remains unknown. Part of Labour's hesitancy was due to a slim parliamentary majority

gained in the February election. This lasted until the October 1974 General Election when the party received a more substantial mandate.[39]

The uncertain outcome of the SALT negotiations taking place between the United States and the Soviet Union also threatened to affect the British deterrent. However, with the MDA due for renewal again in the autumn of 1974, and with Poseidon due to enter service with the United States Navy (USN) in 1975, this was an unpropitious time for cutting the costs of Britain's nuclear weapons research programmes. First, there was a considerable need to revitalise Anglo-American nuclear weapons cooperation after a decade of hesitancy by successive British governments about whether to improve the UK Polaris force. Second, SALT resulted in the ABM Treaty in 1972 which limited the number of launchers to 100 with the 1974 protocol limiting deployments to a single area (the Soviets chose a large area around Moscow). Lastly, the development and deployment of the MIRVed (Multiple Independently Targetable Re-entry Vehicles) Poseidon SLBM meant that Britain was falling further behind the Americans and continuation of nuclear collaboration under the MDA was in danger. Furthermore the upper echelons of the Royal Navy maintained considered opposition to Chevaline, preferring instead that Britain purchase the US Poseidon missile.[40] In this they were encouraged by their colleagues in the United States Navy to seek congressional approval via a political request made through the Ministry of Defence.[41] As Frank Panton later suggested,

> Perhaps the [Royal] Navy's attitude to the improvement question was at least as damaging to Chevaline as the arguments among scientists. Despite Mr. Wilson's rejection of Poseidon in 1968, the Navy always reckoned it as their preferred solution, and took every opportunity to oppose Chevaline ... the Navy never relaxed the pressure for Poseidon.[42]

Despite these uncertainties the full Cabinet, along with relevant personnel in the US, was informed of the decision to continue funding Chevaline in April 1974. Meanwhile, the cost of Chevaline's development had been revised from the 1972 figure of £175m to £235m, largely due to high inflation.[43]

## Chevaline progress, rising costs and the 'Moscow Criterion'

The Treasury was becoming increasingly concerned over the proposed costs of Chevaline, which had risen significantly in the four years of Conservative government, and as a result the entire project was submitted for a full review to identify whether full-scale development should proceed. During this review the Secretary of State for Defence, Roy Mason, wanted to examine the possibility of developing more cost-effective alternatives to Chevaline,[44] however acquisition of US Poseidon missiles was not to be included as an option in the review due to Labour's commitment not to seek a successor to Polaris.[45] Mason and his staff from the MoD visited the nuclear weapons establishments to gain further information for central coordination of what was already a very major project.[46] Mason found that the alternatives under consideration offered no guarantee of meeting the 'Moscow Criterion'.[47]

For these reasons Mason believed that Chevaline's technical problems would be overcome and that it was the best option for meeting the 'Moscow Criterion'.[48] In his report, cheaper alternatives (derisively referred to as the 'Poor Man's Deterrent') were again discounted and further development of Chevaline was included in the long-term costings (LTC) in the defence budget. Mason concluded that continuation of Chevaline was essential in conforming to the 'Moscow Criterion'.[49] This view was endorsed by the Prime Minister,[50] but was met with disappointment by Denis Healey, the Chancellor of the Exchequer and Secretary of State for Defence from 1964 to 1970.[51]

With these budgetary considerations having been pushed to one side for the time being, the miniaturised and lighter hardened warhead being developed to preserve the range of the new Chevaline front-end underwent its first nuclear test, codenamed Arbor (Fallon) on 23 May 1974.[52] At this stage of development all that was offered to Parliament was that Labour did not plan to acquire Poseidon or move to a new generation of MIRVed missiles.[53] Similarly nebulous statements were offered to the full Cabinet by Wilson in November 1974. As Barbara Castle, who sat in Cabinet as Secretary of State for Social Services, recounts, 'Clearly expecting trouble', he requested endorsement for what amounted to no more than 'a minor modification to the existing system' which had already received 'unanimous endorsement' by the Defence and Oversea Policy Committee (DOPC).[54]

Chevaline may never have reached the Arbor (Fallon) test if swingeing cuts in Dennis Healey's 1975 budget had been applied to the Polaris improvement programme. However, its high level of secrecy and perceived strategic necessity took it off the agenda and instead Chevaline was accommodated whilst the remaining defence budget was slashed. The DOPC, like the majority of their Cabinet counterparts, were not in possession of the details of what the project entailed.[55] At a political level only the Ministerial Committee on Nuclear Policy had a comprehensive understanding of both the planned improvements and the escalating costs of the programme.

This information was being kept studiously away from the Cabinet, the parliamentary party and the Public Accounts Committee. This was not unprecedented in the history of British nuclear policy, but it does demonstrate the extent to which the secrecy surrounding Chevaline impinged upon a full and informed discussion of the programme outside a select band of senior ministers and civil servants. However, perhaps this lack of a full and open discussion in Cabinet is as much an indicator of Wilson's fears of a government split over such a contentious area of British defence policy.

## Chevaline's development and administrative infrastructure

Drawing on the considered views of the Chiefs of Staff and Joint Intelligence Committee the decision was made in September 1975 to proceed to full-scale development.[56] The Design Review which followed, at Treasury insistence, prompted the appointment of a coordinating authority for the project, and eventually members

of the British Aircraft Corporation (BAC) were selected to serve in this capacity by the MoD. BAC had experience in large-scale project management and it was intended for them to exercise tight fiscal control over the project.[57] The appointment of a coordinating authority also contributed to a major overhaul of the management of the project which saw the Royal Navy take sole control. Until this point the Polaris improvement programme had been presided over by the Ministry of Defence.[58]

There were a number of people under consideration to head the project, including oversight of the coordinating authority, and the new management structure took several months to finalise. With such a politically charged appointment the government felt the decision had to be the right one. Sir Edward Ashmore, the Chief of the Naval Staff (CNS), proposed Rear Admiral David Scott who was then Deputy Controller (Polaris) to head the overall management of the project through to completion. However as John Mayne, Roy Mason's Private Secretary pointed out, 'Since the basic trouble with Chevaline is that Scott and Panton (the Assistant Chief Scientific Advisor (Nuclear)) cannot see eye to eye, and since Scott is pathologically anti-Chevaline, this does not seem a very clever suggestion'.[59] This was an issue that had to be resolved and which culminated in Panton's departure as ACSA(N) by his own volition.[60]

The new management structure was intended to push the research programme into the development stage. It was felt within the MoD that sufficient progress had been made on Chevaline for initial deployment to begin in 1982.[61] However, Scott's nomination by the CNS was still a cause of political friction between the Royal Navy and the Ministry of Defence, which up until 1975 had retained overall responsibility for the project.[62] With responsibility now passing to the Royal Navy this led to a heated discussion between Mason, the Secretary of State for Defence, and Ashmore on 30 October. Mason had fundamental objections to Scott's appointment, stating that 'Scott had become emotionally involved against, rather than for' Chevaline, and that as the government 'was heavily committed politically to the project ... everyone in the organisation would have to be whole-heartedly behind it'.[63]

Ashmore still wanted Scott to head the project as Chief Polaris Executive (CPE). This was despite the fact that Scott had continued to express serious doubts about Chevaline and did not get on with either Victor Macklen or Frank Panton – the two most senior scientists on the project. Ashmore said he had been right to express his objections and that he still felt Panton was not the right man for the job.[64] Scott was subsequently confirmed in his position despite the objections of Mason.[65]

There were a further series of changes of personnel as part of this reorganisation, including the appointment of Fred East as Chief Weapons Systems Engineer for Chevaline with W. Lord succeeding him as Director of the Royal Armament Research and Development Establishment at Fort Halstead whilst John Challens took over as Director of the Atomic Weapons Research Establishment (AWRE) at Aldermaston upon the retirement of Ted Newley in March 1976.[66] Immediately Scott was keen to initiate a review of the project in terms of cost and timescale and hoped to arrange an early meeting of the new Steering Committee in January to take the project forward on

behalf of the Royal Navy which formally took over the project on 1 April 1976. Whilst these domestic developments were taking place Harold Wilson was also beginning to take a fresh interest in Anglo-French nuclear collaboration.[67] These dialogues reveal the extent to which developments at a national level resonated bilaterally with France and the United States and also through wider debates taking place between the US and Europe during the period of détente.[68]

## Renewed interest in Anglo-French nuclear collaboration

Whilst Wilson's predecessor as Prime Minister, Edward Heath, had looked to Anglo-French nuclear collaboration as a touchstone for tackling wider issues of European defence and foreign policy Wilson took a more pragmatic view (as eventually had Heath).[69] For Wilson Anglo-French cooperation on nuclear weapons would be a method of alleviating some of the pressures on the UK defence budget whilst also strengthening European initiatives in conventional defence.[70] Following the decision to proceed with Chevaline, interest now lay in theatre nuclear weapons (TNWs). Joint development of TNWs was viewed as a method of facilitating closer Franco-British relations in the nuclear field.[71] It was also felt by senior figures in the MoD that this might act as a gateway for a trilateral nuclear relationship involving the United States.[72] Discussions began with an approach from General Maurin, the *Chef d'État-Major des Armées* to his British opposite number, Peter Hill-Norton, in October 1974.[73]

Talk of Anglo-French nuclear cooperation was a very sensitive subject, and had to address American concerns regarding the transfer of US nuclear secrets as well as NATO concerns (particularly in West Germany) of a Franco-British nuclear pact.[74] If nuclear collaboration could be usefully pursued on TNWs then this not only might assist with future consideration of joint successor systems for strategic weapons, but could also decrease the strain on Allied defence budgets. Collaboration was also seen as a means to lure the French back into NATO's integrated military structure, simultaneously increasing Alliance cohesion whilst alleviating fears that the US would reduce its commitment to NATO following the end of the Vietnam War.

The Foreign and Commonwealth Office suggested that 'we should certainly want to consider very carefully the political consequences ... meanwhile we can use the interval of the next few months to sort out our own ideas and prepare ourselves'.[75] The Ministry of Defence felt that as the 'ball is in the French court' it was 'up to them to show some further initiative' as 'we see little prospect that the discussions would be at all fruitful'.[76] The MoD also cautioned, 'any question of collaboration with the French over strategic weapons is even more remote than it was under the last British government'.[77] The Chief Scientific Advisor in the MoD, Sir Hermann Bondi, similarly realised that there was little scope for collaboration unless the French were prepared to move their nuclear forces off a purely national footing.[78]

The FCO agreed with the MoD's pessimistic prognosis despite the ongoing review of French defence policy by the new government of Valéry Giscard D'Estaing.[79] Collaboration on theatre nuclear weapons such as the French *Pluton* battlefield missile

would require a revision of French tactical doctrine to bring them into line with NATO. Sir John Killick, Deputy Under Secretary of State at the Foreign and Commonwealth Office, also noted: 'the fact is that collaboration with the French is of little interest to us since we have already decided for the best of reasons to adopt Lance [the US battlefield missile] rather than Pluton'.[80]

With discussions on French theatre nuclear weapons taking place bilaterally as well as internally in the FCO, MoD and with NATO, the British were also looking to discuss a French request to confer over the implications of SALT I.[81] As Christopher Tickell of the Foreign Office pointed out, 'any discussion of "the future of the British and French national nuclear deterrents in the post-SALT world" would be a hot potato; but I still think we should agree to handle it albeit in thick gloves'.[82] Although SALT, which was aimed at promoting détente, was widely supported by the British government it could also be perturbing. The British feared these ongoing talks pointed to an increasing trend towards superpower bilateralism. This could jeopardise the hard won 'special nuclear relationship' and cooperation with France afforded a contingency against any problems that might emerge with the US. Moreover it could also solidify the 'second centre of decision' role afforded by European possession of a nuclear deterrent, publicly affirmed by NATO in the Ottawa Declaration of June 1974.[83]

The cost of the French nuclear programme was estimated by the British to be £202m in 1974 rising to £215m in 1975 whilst future research and development on hardening, miniaturisation and a multiple warhead system would entail considerable further costs.[84] In October 1975 the French government finally bowed to international pressure to cease atmospheric nuclear testing following the establishment of an underground test site in the Pacific.[85] As a consequence the US revealed to the Labour government that it had been assisting the French nuclear programme in order for France to begin testing underground.[86] This assistance, which had been underway since 1972, included engineering advice along with organisation and management of the tests.[87] It took until May 1976 for the British to get a more complete picture of this support from the US government. So secret were negotiations with the French that only a few people in the Nixon Administration knew about them (perhaps as few as five) and even this 'inner circle' did not have the complete picture.[88]

This change in policy had been initiated by President Nixon in 1972 but 'had languished while Jobert [the French Minister of Foreign Affairs between April 1973 and May 1974] was in office, but was now in force again'.[89] The assistance provided to the French nuclear programme fell within the existing national legislation and international agreements and was fairly restricted. It was felt by the Nixon administration that this agreement was in American interests (as a capable French deterrent independent of NATO complicated strategic planning for the Soviet Union) and that there was not a specific *quid pro quo* on which this was based.[90]

The following month an attempt was made by Victor Macklen, British Deputy Chief Advisor (Projects and Nuclear), to glean more information about the nature and scope of this assistance from the US at one of the Anglo-American nuclear 'stocktake'

meetings. However, Macklen could elicit no response from his American counterparts. He was told the matter would be taken up by the State Department.[91] The current declassified record does not indicate whether any reply was received and it appears this renewed attempt to revive Anglo-French nuclear cooperation had been trumped by the Americans. This left the British to contemplate whether it was worthwhile to collaborate with France on a next generation submarine and missile.

In April 1977 this subject was broached by the French in a conversation between Fred Mulley, the new Secretary of State for Defence, and his French counterpart Yvon Bourges. During this exchange Professor Ronald Mason, the Chief Scientific Adviser in the Ministry of Defence, responded to Bourges' suggestion with little enthusiasm. He stated that it would be many years before the Polaris submarines needed to be replaced and questioned whether the current generation of French strategic missiles were capable of penetrating Soviet defences. Bourges indicated that the Moscow ABM screen was likely to be effective against France's current SLBMs and that the French concept of independent deterrence was in doubt unless they adopted a similar level of ABM defence around Paris.[92]

James Callaghan, the new British Prime Minister (following the resignation of Harold Wilson in March 1976), believed Bourges' approach to be of 'considerable significance, and raises the question of whether it indicates some shift in French policy on defence co-operation generally'.[93] He asked David Owen, the Foreign and Commonwealth Secretary, for his views.[94] Although the documents released so far do not indicate what Owen's response was, the Foreign Office raised the issue with the British Ambassador to France, Sir Nicholas Henderson. His assessment was that Mulley had been sounded out due to the high cost the French would accrue with the development of a second generation SSBN force and concerns regarding US policy on arms control.[95]

Victor Macklen took a slightly different position. He felt that as a successor system to Britain's Polaris force would take many years to develop and deploy following a positive decision, it made sense to look at all the available options. As France had developed extensive indigenous missile and test facilities (facilities which the UK lacked) Bourges' suggestion appeared to be a 'sensible step and a move to maintaining a high technology base in Europe'.[96] The French testing programme was not as sophisticated as that of the British and Macklen felt that the French may be 'fishing to find out if the UK has access to the data they lack'.[97]

In particular they had not been able to simulate the effects of an ABM detonation and their warhead designs were not as efficient as they could be and for these reasons they had a strong desire to continue testing.[98] Whilst the British held expertise in penetration aids, efficient warhead design and manufacture (proficiency the French lacked) an opportunity existed to explore these areas to mutual advantage. However, due to the US assistance provided to the British, through the 1958 Mutual Defence Agreement and the 1963 Polaris Sales Agreement, the American government would have to give its blessing.[99]

Low level interest on the joint development of a successor strategic missile system continued throughout the summer of 1977 with one junior official in the French government, M. de Saint Germain, indicating that as they were looking to replace at least some of their strategic forces by the late 1980s they were interested to know what Britain was looking at for its own strategic deterrent. Under these circumstances de Saint Germain questioned whether there was a possibility of Anglo-French cooperation on strategic successor systems.[100] Although no reply has been released, it appears there was an element of all three sides (America, Britain and France) trying to play one against the other and British officials for their part were looking to find out exactly how much assistance was being provided to the French by the US.

In November 1977 it was noted by one senior British nuclear scientist, Charles Martin, shortly after his visit to US strategic facilities, that there were 'growing [US] exchanges with France'.[101] These included work on warhead vulnerability to ABMs on which the UK's Atomic Weapons Research Establishment had expended a great deal of effort, and also in one specialised area in which French work was considered to be five years in advance of US research.[102] With debates on a successor SLBM system for the UK now beginning to take shape in the Ministry of Defence and the Foreign and Commonwealth Office it was decided to bring these developments to the attention of the Prime Minister prior to the visit of President D'Estaing the following month.[103]

In a brief by Victor Macklen intended to aid these discussions, he noted that whilst the UK and France's nuclear laboratories had similar capabilities France spent up to three times as much as the British on research and development. The French had far more elaborate facilities and more computational capabilities thanks to US supplied computers, but were not as advanced in warhead designs even though the art (if not the article) of US warhead design had been passed on. Macklen believed that if collaboration with the French was to be pursued, then it should be in the field of missile technology, not warhead technology. As far as Macklen was concerned, 'This clearly reflects upon the successor system issues, and can hardly rest until 1980 without further erosion of the UK position'.[104] However, with France likely to continue to test nuclear weapons should a Comprehensive Test Ban Treaty (CTBT) be negotiated, if warhead collaboration was pursued then Britain could covertly benefit from the French test programme.[105]

Ahead of a December 1977 meeting between Callaghan and D'Estaing, a briefing paper was prepared which examined the current state of French strategic nuclear forces and the prospects for collaboration on a successor system. This briefing paper, prepared by Michael Quinlan of the Ministry of Defence in conjunction with the FCO, questioned whether the current French strategic missile systems were sufficient to meet the 'Moscow Criterion' on which the British government based their operational parameters for independent strategic nuclear targeting. Quinlan also raised doubts about the operational capabilities of French SSBNs which he considered to be more vulnerable to detection than either British or US submarines.[106]

These issues were being addressed by the French, who were looking to improve a number of aspects related to their SSBNs and missiles. These included improvements to navigation and sonar systems aimed at reducing the vulnerability of the SSBNs to detection by Soviet hunter-killer submarines. There were also plans to update the missiles carried aboard by increasing their range to 2200 nautical miles (which would make them comparable to Britain's Polaris missiles with the revised Chevaline front-end). This increase in range would allow them greater sea-room in which to patrol. They were also likely to be given a multiple re-entry system (MRV) capability but would not go straight to MIRV. Instead they were likely to develop a system of penetration aids to enable them to overcome ABM defences. It was felt by Quinlan that these new missiles could be available for fitting into a second generation SSBN in the late 1980s or could be retrofitted into the existing SSBN fleet.[107] Despite these positive assessments, UK analysis of French atmospheric testing up to 1974 included doubts about the 'hardness' of the re-entry vehicles containing the warheads. If their shielding was insufficient they could not be expected to withstand defensive nuclear bursts from Soviet anti-ballistic missiles.[108]

Less than a week after his initial paper Quinlan produced a more comprehensive follow-up brief ahead of the forthcoming visit of President D'Estaing. This brief kept an open mind on the form of a potential successor system to Polaris and sought to elicit from the French what plans they had in mind for their strategic systems over the long term. Quinlan suggested that the line to take would be to refer back to Bourges' suggestion from April 1977 when he proposed that collaboration could take the form of British built submarines and French missiles. Although this had been given little encouragement at the time, there were subsequent indications of French interest in this proposal. He also suggested the government make it clear that they were not moving towards a MIRVed system for the current Polaris submarines but were developing measures (largely indigenously) aimed at penetrating the Soviet ABM defences.[109]

Quinlan however was equally quick to point out the potential political difficulties that Anglo-French nuclear collaboration would entail for both states. These included the question of how to resolve the divergences of policy towards NATO and also towards nuclear non-proliferation and arms control. Whilst it would draw positive benefits from a technical standpoint, Quinlan suggested that collaboration should not be wholly encouraged as much would depend on whether further US cooperation was to be made available. Instead he favoured avoiding any action which could have a detrimental impact on US–UK relations for one which could still be used to gauge French feelings on this subject.[110]

These talks continued during 1978. David Owen, the Foreign Secretary at the time, recounts,

> I opened a dialogue with Jim Callaghan's full agreement, with my opposite number, Monsieur de Guiringaud, and we began to discuss nuclear questions. And there was a little bit of dialogue between the two ministries of defence ... Their weapon system, at that stage, too, hadn't really become as effective as it has done since.[111]

Although the record of these discussions remains incomplete, they played some part in consideration of a UK successor system between 1977 and 1980. Meanwhile the British, like their French counterparts, were preparing for a renewed series of nuclear tests aimed at proving the new Chevaline warhead but which also could be used in the development of a successor system. The first of these tests took place in 1974, and was codenamed Arbor (Fallon).

## British nuclear testing

For the Labour government, improving the nuclear deterrent meant overriding the concerns of the vocal wing of unilateral disarmers within the Labour Party as well as the popular national Campaign for Nuclear Disarmament (CND). A series of nuclear tests had been scheduled to take place at the Nevada Test Site in May 1974 by the previous government and they were expected to aid in the development of the Chevaline warhead and assist in the design of the payload. These tests were necessary for the development of Chevaline's smaller, more hardened warhead which helped to preserve the range of the Chevaline front end to the maximum range of the Polaris missile. When Labour returned to power in February 1974, it was faced with an important decision on whether or not to proceed with the planned test.

The warhead was a prototype also being used to test against future defensive ABM measures expected to be developed during the service life of Polaris.[112] Given Labour's internal problems with nuclear policy it was unclear at this stage whether the test series was to be made public or even discussed in the Cabinet. The Private Secretary to the Secretary of State even penned in the margin for Mason, 'In view of the sensitivity of the PM on this. I think it would be advisable for me to drop a line to No. 10'.[113] It was recognised that even with the test due to take place during the summer recess of parliament it would be impossible to expect it to go unnoticed.[114] Despite some reservations and anticipated criticism it was nevertheless allowed to go ahead on 23 May 1974.

As expected the Arbor (Fallon) test generated enormous controversy and led to a stinging rebuke from the left-wing Tribune Group which had strong links to the Parliamentary Labour Party (PLP). Tribune member and backbench Labour MP Frank Allaun denounced the tests as promoting a 'suicide weapon' which if released would invite instant retaliation on the UK.[115] He also argued that it set a bad example to other states and encouraged nuclear proliferation. Allaun felt that it should be the policy of the Labour government to abandon its nuclear programme, not seek to improve it, and appealed directly to the Prime Minister to do this.[116]

In order to limit further criticism Roy Mason, the Secretary of State for Defence, organised a press conference where he defended the tests as not breaking any Labour manifesto commitment or international agreement. Tests were necessary only to maintain the credibility of the deterrent.[117] To many on the Labour left maintaining the strategic deterrent was not part of their agenda and the National Executive Council of the Labour Party (NEC) similarly denounced the test.[118] For the Ministerial

Committee on Nuclear Policy, national security considerations continued to override the concerns of the unilateral disarmament advocates within the party.

For these reasons the Labour government sought to minimise any publicity over this and future tests. As Frank Panton, ACSA(N), noted in regard to a follow-up test, 'we and the US are taking every precaution to keep our intentions secret, and on past occasions our preparations have remained hidden'.[119] Panton went on to add that it was essential, 'to enable the US laboratories to undertake an independent assessment of the design and safety of our device; a necessary preliminary to its acceptance in principle by the range authorities as a device suitable for testing'.[120] In order for the test to fit in with the autumn schedule for joint testing at Nevada, Cabinet approval was being sought by the design authority responsible for the warhead early in 1976.

In a revealing letter between two of the members of the Ministerial Committee on Nuclear Policy, Defence Secretary Roy Mason wrote to Foreign Secretary James Callaghan indicating his concerns:

> Although we agreed that a final decision need not be taken until about six weeks before the planned event – when it is envisaged that the Cabinet will be given the opportunity for a discussion before political clearance is given – I could not risk continuing to talk publicly in terms which implied that a further test is a remote possibility right up to the time when I might have to announce that a test had actually taken place. That would be blatantly disingenuous and would have given the critics genuine cause for complaint.[121]

In order to dampen expected opposition to this shot, and subsequent tests, Mason suggested to Callaghan that a short public statement be prepared outlining the government's position.

As the previous Conservative government had itself been heavily involved in preparing the ground for the development of Chevaline he did not anticipate discordant voices from the opposition. Rather this statement was directed to offset criticism from members of his own party and CND. Mason suggested that:

a. pending multilateral agreement on measures for nuclear disarmament, for which we shall continue to work, we plan to maintain the effectiveness of the nuclear forces which we have committed to NATO;
b. nuclear tests may be required from time to time for this purpose;
c. the tests will always conform strictly with our Treaty obligations; all environmental and safety precautions will be taken; yield will be well below the threshold of 150 kilotons agreed bilaterally by the United States and Soviet Union at the Summit Meeting in Moscow in July 1974; and their number will be very small compared with those carried out by Russia, China, the US and France;
d. to fit in with the US programme of tests, long term planning for our own possible requirements has to be carried out on a contingency basis, sometimes even before it is certain a test will be necessary;
e. security considerations preclude announcement of a test before it has taken place.

> We shall continue the established practice of announcing that a test has taken place after a preliminary evaluation has been made of its results.[122]

Mason indicated this was as far as he could go: 'In this way I hope to release the cork gently, since this seems to me to be a much wiser way of proceeding than to risk the political explosion, which would likely be of nuclear proportions, if we do not learn from last year's experience.'[123] Mason, like many of his predecessors on the MCNP, was not planning full disclosure of the need for the test to either the Cabinet or Parliament.[124] The MCNP was only prepared to discuss in Cabinet and Parliament the need for tests as maintaining the effectiveness of the deterrent.

The damaging criticism of the 1974 test from members of their own party had left Labour government ministers in a vulnerable position on how to respond to condemnation. The Labour government's main tactic was to continue to refer to the tests as merely maintaining the credibility of the deterrent, which did not represent movement towards a next generation weapon. These political sensitivities were often used by the Conservative opposition to question precisely what the government was doing to improve the deterrent. Although in opposition they had been instrumental in laying the groundwork for Chevaline, the Conservatives did not overlook the opportunity to achieve some political gain out of Labour's difficulties. With the Labour government operating on a wafer thin majority of four seats over the Conservatives, and dependent on minority party support in order to pass key legislation, nebulous statements such as these were deemed a necessary measure to limit controversy surrounding British nuclear policies.

The criticism of these tests weakened an already strained government struggling to combat industrial unrest and economic difficulties, but the MoD was able to persuade the government of the tests' necessity on technical and strategic grounds, and the MCNP assented to a new test scheduled for autumn 1976, codenamed Anvil (Banon). Anvil (Banon) was part of an attempt to fundamentally re-examine the whole Chevaline system in an attempt to preserve the weight–range ratio of the current Polaris missile's front end as well as to clarify the 'Exchange Ratio'. This was the number of Polaris missiles needed to guarantee penetration of the Soviet ABM system in order to provide 'assurance of destruction'. The 1976 test was not an end in itself though and further tests would need to be conducted.

Both of these crucial elements were examined at a further underground nuclear test in Nevada – Cresset (Fondutta) on 11 April 1978.[125] Cresset (Fondutta), as with previous tests, was conducted in full cooperation between the US's Lawrence Livermore National Laboratory and AWRE. At least part of the test was aimed at developing fission warheads (sub-20kt) whose future testing at Nevada may prove difficult to detect even if a Comprehensive Test Ban Treaty had come into force.[126] A hollow warhead cavity used ostensibly for a conventional warhead (casings for which were being developed independently by Lawrence Livermore and AWRE) would allow a 'stockpile of conventional munitions [which] could be given a nuclear capability in an unverifiable way'.[127] Due to their conventional nature this would not

break the terms of a CTBT but was not in the spirit of the treaty. A further test was also being planned for 1 December and the 'US authorities recognise our sensitivity on any leakings of information on these tests and are taking special measures to ensure protection of information related to the UK programme'.[128]

This test eventually took place on 20 November 1978, the first of the Quicksilver trials – Quargel. Quicksilver (Quargel) was designed to examine the possibility of developing a warhead suitable for use in a high speed re-entry vehicle (RV) and was comparable to work conducted by the US for its Poseidon SLBM.[129] However nothing more has yet been declassified related to Quicksilver (Quargel).

Costs at this point in 1978 were still running at four times the original cost estimates and when Chevaline was again discussed by the Ministerial Committee on Nuclear Policy, serious thought was given once again to cancelling the project. According to the memoirs of David Owen, Prime Minister James Callaghan, Chancellor of the Exchequer Denis Healey and Defence Secretary Fred Mulley, as well as Owen himself as Foreign Secretary, endorsed the continuation of Chevaline despite significant doubts. In Owen's case these arose from his long-held desire 'to explore the option of the cruise missile as a cheaper minimum deterrent'.[130] At the end of 1978 the matter was brought before the MCNP again when Owen stressed his predilection for the *Tomahawk* cruise missile being developed by the Americans as a replacement for the British Polaris system. His objections were overruled.[131] As so much capital had been sunk into the project the MCNP decided that Chevaline should be funded through to its conclusion.

The dampening of political debate in public and parliament was considered necessary by the MCNP in order to guard the improvement programme and to avoid alerting the Soviet Union to the fact that there were doubts regarding the UK's Polaris force's ability to penetrate Moscow's defences. However this also limited internal political divisions and led to accusations in the press, from CND, and amongst the Parliamentary Labour Party, of a lack of democratic accountability and openness relating to a key aspect of government defence policy.[132] There was considerable, but understandable, reluctance to enter into debate on grounds of national security, however, the national security/secrecy argument can also be viewed as a means to limit potential criticism and weaken accountability. In any event, given its narrow parliamentary majority and the existing public divisions regarding nuclear weapons, Labour continued to stifle public debate about British nuclear policy.

Philip Ziegler, Wilson's official biographer, notes that the Polaris improvement programme was rarely discussed in Cabinet and that Cabinet ministers were excluded from these deliberations.[133] Hand-in-hand with this lack of Cabinet debate was the continued imposition of a high degree of secrecy on discussions related to nuclear deterrence. The 'need to know' rule regarding national security issues extended even to the point where the Chancellor of the Exchequer was excluded from the deliberations of the MoD.[134] The MCNP, led by the Prime Minister, was forced to tread carefully as it funded a highly secret programme to improve the deterrent whilst at the same time containing divisions within its own party and minimising Treasury oversight and objections.

With the government in the process of yet another major (and periodic) defence review (begun in 1978), the Treasury was looking at further ways of trimming the defence budget. One of the principal programmes under threat from the Treasury was Chevaline, however the British concept of *independent* nuclear deterrence articulated by the Chiefs of Staff and accepted by the government drove Chevaline's continuation.

Further nuclear tests, although highly damaging to Labour, were necessary prerequisites to the success of the Chevaline programme, and these tests also had wider applications for non-strategic weapons and for a possible Polaris replacement. The second test in the Quicksilver series in August 1979 – Nessel – was aimed at exploring technology used for triggering the thermonuclear part of the device which had a wide variety of uses in a theatre as well as strategic weapons.[135] This trial would also lessen the need for further tests, which was then viewed as extremely useful given the possibility that a Comprehensive Test Ban Treaty banning all nuclear tests might later be signed.

This test was also of value to the American warhead programme as the UK designs were considered state-of-the-art. AWRE was intending to use Quicksilver (Nessel) to prove the new technologies.[136] As Victor Macklen, Deputy Chief Advisor (Projects and Nuclear), advised: 'The great interest of the US laboratories in this UK test underlines its value in enlarging the scope of the existing close UK/US collaboration in nuclear warhead design, a collaboration which becomes doubly important in maintaining our design competence under a possible test-ban régime.'[137] However, David Owen was concerned by the international implications of these tests, particularly as Commonwealth countries such as India were expecting Britain to take the lead in implementing its declared policy of discouraging nuclear proliferation.[138]

The 1979 Quicksilver (Nessel) test also held out the possibility of the development of a future warhead which would be lighter than existing designs and which would in turn increase the range of the missile or aircraft carrying it. The small trigger used to set off the thermonuclear elements of the warhead was of considerable interest to the Americans who could use it in their own thermonuclear designs.[139] Furthermore this was the first test of a physics package suitable for use in a high speed re-entry vehicle such as that used in the US Poseidon missile.[140] This was of immediate benefit to a possible purchase of a US designed successor system.[141] Although thinking along these lines had already been evident in secret Anglo-American discussions, this stood against Labour's publicly declared position not to develop a successor to Polaris.

Almost alone in the MCNP, Owen remained opposed to the Quicksilver test fearing it would damage the delicate CTBT negotiations.[142] He felt that there were prospects for a moratorium coming into force before July 1979 and remained unconvinced of the wisdom of planning for a test which 'may come to nothing'.[143] However, the Quicksilver test was considered vital for future collaboration with the American nuclear establishment. For this reason Victor Macklen urged Fred Mulley, Roy Mason's replacement as Secretary of State for Defence in September 1976, to approach Owen directly to stress the importance of allowing this test to proceed.[144]

Following pressure from Mulley, Owen agreed to continue preparations for a further test scheduled for July – ahead of an expected moratorium,[145] and the decision to proceed was subsequently endorsed by the Prime Minister.[146] For the new Chief of the Defence Staff (CDS) Sir Neil Cameron, political anxieties remained secondary to military concerns. He was more concerned that a moratorium, especially a voluntary moratorium, would hamper the British test programme and delay Chevaline whilst impeding the prospects of developing a successor to Polaris.[147] With this in mind the Prime Minister was content to allow preparations for a July test to proceed until a Comprehensive Test Ban Treaty was signed.[148]

The rationale behind both the tests and the Chevaline improvement programme, as far as both main political parties were concerned, was the paramount issue of maintaining a credible independent nuclear deterrent. Still the development of Chevaline was problematic for Labour in a way it was not for the Conservatives. When the decision was made to start testing again in 1974 for the first time in nine years, it created a storm of controversy within an already fractious party. This led to parliamentary questions on why precisely the government was testing. However, to publicise the details of the Chevaline improvement programme in such a public manner as to announce it to Parliament would visibly flag to the Soviet Union, as well as Britain's NATO allies, that there were serious doubts the current Polaris system would prove effective against the Soviet Union.

The judgement of the MCNP was to refer to the tests as maintaining the credibility of the strategic deterrent. The new Conservative government of Margaret Thatcher was not so constrained by internal dissent and, following victory in the general election of May 1979, it publicly announced the existence of Chevaline in January 1980 and concluded negotiations for the purchase of US Trident missiles six months later. During Mrs Thatcher's first government a further seven nuclear tests were conducted and deployment of the Chevaline improvement began in 1982 and lasted until the mid-1990s when the four new Trident submarines took over deterrent patrols with the Polaris fleet and their Chevaline warheads were decommissioned.

## Conclusion

The return to power of the Labour government of Harold Wilson, succeeded by James Callaghan in 1976, did not herald any major change in policy towards the Chevaline programme. Indeed, the approach taken by the Labour government demonstrated a remarkable degree of continuity with its Conservative predecessors. The government soon formalised the existing Ministerial Committee on Nuclear Policy (which Labour had established in 1966 as an executive decision-making structure for British nuclear weapons policy) and set about agreeing a way forward for Chevaline.

However, with the promise of further cuts in the defence budget Roy Mason, Secretary of State for Defence between 1974 and 1976, and his committee colleagues

agreed only to fund the programme for six month periods whilst a defence review took place. The absence of a clear parliamentary majority meant this decision was:

> very much a temporising move, and it was not until after the election of October 1974, which resulted in a satisfactory [Labour] majority, that real efforts to reach a decision took place ... Even then, the decision took nearly a year to achieve, and it was not until Roy Mason gave the management of the project to the Navy in September 1975, and after six months of assessment and assembly of the new project team, that the Navy took over on 1 April 1976.[149]

Even then the huge expenditure was difficult to countenance with growing prospects for détente through the SALT process and the establishment of the Conference for Security and Co-operation in Europe.

With a wing of vocal unilateral nuclear disarmers within the Labour Party to contend with, Wilson's government had to tread carefully or run the risk of a public split. Therefore Chevaline continued, surrounded by the highest levels of secrecy, which allowed the rising costs of the programme to be concealed from some of the most senior members of government including the Chancellor of the Exchequer Denis Healey. During this period Chevaline was to come under serious and sustained scrutiny particularly as the first round of Strategic Arms Limitation Talks had resulted in the ABM Treaty of 1972 and a 1974 protocol which limited the deployment of ABMs to 100 launchers around one area only.

Under these conditions Roy Mason conducted a study aimed at finding cheaper alternatives (the 'Poor Man's Deterrent'). During the course of this review Mason concluded that in the absence of American MIRV technology the only way to continue to threaten Moscow, the site chosen by the Soviets for their ABM launchers, was to continue the development of Chevaline. With the potential alternative programmes discontinued, it was recommended that Chevaline be funded through to completion in September 1975. This decision, on top of the rising costs, led to the Royal Navy being given control of the project. With this overhaul of the management structure, Chevaline proceeded from the research stage towards development. Despite a great deal of parliamentary questioning, particularly from Labour backbenchers, it continued in a low-profile manner with little hard information made available even to Cabinet.

In spite of Chevaline's rising costs, AWRE and the Ministry of Defence were authorised to press ahead with warhead development for the proposed Chevaline improvement and also to lay the groundwork for a successor system. The series of nuclear tests initiated in 1974, the first for nine years, set about proving the viability of the new hardware developed during seven years of serious research. These tests were kept as low profile as possible both to guard national security interests and also to prevent further damaging splits within the Labour government. This secrecy extended to the Cabinet with only the Defence and Oversea Policy Committee garnering more than the stock responses issued to Parliament that these tests were to sustain the credibility of the current deterrent system. Only the few senior members of the

government sitting on the Ministerial Committee on Nuclear Policy were able to see in detail where these tests were leading.

This small group of ministers also presided over discussions with the French government of President Giscard d'Estaing which renewed the exploration of nuclear collaboration established under the previous Conservative government of Edward Heath. For three years collaboration was discussed until the revelation that the Americans had been covertly supplying nuclear assistance to France prevented further negotiations on the current generation of nuclear weapons.[150] These discussions did not rule out future collaboration on the next generation of strategic systems and they also came to play a part in the replacement debate which was to begin in earnest in 1978. At present, much still remains to be declassified regarding these discussions with the French and it remains unclear how meaningful these discussions were.

The difficulties of mounting a largely indigenous strategic nuclear programme was to decisively influence the debate regarding a successor system in what Peter Malone has described as the 'Chevaline imperative'.[151] By the time Mrs Thatcher arrived in office in May 1979 the key decisions concerning Chevaline had been taken, leaving the Conservatives to manage the project through to completion. How this was accomplished is still to be declassified.



## Acknowledgements

The author would like to thank a number of people for their help and assistance in the preparation of this article. My gratitude is owed in particular to Professor John Baylis, the late and much missed Sir Michael Quinlan and Dr. Frank Panton, the anonymous peer reviewers of this article as well as participants at the British Rocketry Oral History Project Conferences (BROHP) at Charterhouse in April 2005 and again in April 2006, all of whom have offered useful comments in preparation of this paper. The author would also like to pay gratitude to a number of key officials who wish to remain nameless for their comments. Their contribution is referred to in the footnotes as 'confidential correspondence'. All references prefaced by TNA are taken from The National Archives, Kew, UK. Any omissions or *errata* in this article are the author's own.

## Notes

[1] On the 'Moscow Criterion' see Stoddart, 'Maintaining the Moscow Criterion'.

[2] For more detailed information on the threat see Stoddart, 'The Wilson Government and British Responses to ABMs'. For more detail of what the Chevaline project involved see Baylis and Stoddart, 'Britain and the Chevaline Project'.

[3] Through the Freedom of Information Act (2005) it is now possible to request all but the most recent documents. However FOIA has its limitations and it remains difficult to get access to certain evidence. This is particularly true of nuclear weapons-related documents. For more information see Twigge, 'Freedom of Information and the Historian'.

[4] Although oral evidence and the written testimony of surviving participants cannot supplant government records, it can offer personal insights and nuances not contained in the surviving documents which have been made publicly available. Oral and written testimonies have been used selectively in this article. Nevertheless it must be remembered that

participants might also have a vested interest in shaping the historical record in a particular way in order to justify the role they played at the time.

[5] Hennessy, *Secret State*.

[6] Although a large number of key documents remain withheld by the British government under the Public Records Act it has been possible to overcome this 'documentary deficit' assisted by the British Nuclear History Study Group based at the Mountbatten Centre for International Studies at Southampton University (MCIS) and the British Rocketry Oral History Project (BROHP) conferences held annually at Charterhouse. Both provide a hub around which active academic researchers and former participants in UK nuclear weapons programmes can discuss aspects of the British nuclear weapons programme. MCIS website: http://www.mcis.soton.ac.uk (accessed 26 March 2006) and BROHP website: http://www.brohp.org.uk (accessed 26 March 2006).

[7] A select few include Gaddis, *We Know Now*; Mastny and Byrne, *A Cardboard Castle*; Richelson, *Spying on the Bomb*.

[8] The approach taken by the first Wilson government towards a Polaris improvement programme in the context of the developing arms control agenda is examined in Stoddart, 'British Responses to Anti-Ballistic Missiles, 1964–1970', 1–33; and Twigge and Schrafstetter, *Avoiding Armageddon*, 163–202.

[9] PREM 15/2038 (TNA), RTA *Note for the Record*, 8 February 1974.

[10] It has been suggested that before 1970 the Royal Aircraft Establishment received a letter from the Cabinet Office prohibiting them from talking to certain left-wing Labour Ministers such as Tony Benn and Barbara Castle. Confidential correspondence, 6 April 2006.

[11] For information on the UK state structure as it relates to the military establishment see Edgerton, *Warfare State*, in particular 235–44 and 256–63.

[12] CAB 130/720 (TNA), MISC 1(74) 1st Meeting International Aspects of Nuclear Defence Policy Minutes of a Meeting held in Conference Room D, Cabinet Office on Monday 11 March 1974 at 11.15 am, 11 March 1974.

[13] For the purposes of continuity this key group of senior ministers will be referred to as the *MCNP*. On its formation see CAB 134/3120 (TNA), PN(66)1, 30 September 1966.

[14] CAB 134/3821 (TNA), PN(74) 1 April 1974 Cabinet Ministerial Committee on Nuclear Policy Composition and Terms of Reference Note by the Secretary of the Cabinet, 1 April 1974.

[15] CAB 134/3821 (TNA), PN(74) 1 April 1974 Cabinet Ministerial Committee on Nuclear Policy Composition and Terms of Reference Note by the Secretary of the Cabinet, 1 April 1974.

[16] DEFE 5/192/45 (TNA), *The Rationale for the United Kingdom Strategic Deterrent Force*, 25 April 1972.

[17] PREM 15/1359 (TNA), *Strategic Nuclear Options* (Memorandum by the Ministry of Defence), 2 November 1972.

[18] Private correspondence with Sir Michael Quinlan, 15 August 2006.

[19] Confidential correspondence, 7 April 2006. In terms of the amount of damage required see Baylis, *Ambiguity and Deterrence*, 220–362.

[20] Confidential correspondence, 7 April 2006.

[21] This included an option designated Variant A. DEFE 13/1039 (TNA), *Top Secret UK Eyes A* MO 18/1/1 *Note for the Record Meeting British National Criteria for Strategic Deterrence*, 27 November 1975. It was assumed that Soviet hunter killer submarines would 'observe' when the Polaris submarines went out on Patrol from Faslane and could therefore choose the best moment of a 'bolt from the blue' – a Soviet fist strike with little or no warning of attack. Confidential correspondence, 6 April 2006.

[22] Baylis and Stoddart, 'Britain and the Chevaline Project', 128–33.

[23] This decision had been communicated to the Americans in January 1974. PREM 15/2038 (TNA), Cromer FM Washington 172124Z, 17 January 1974.

[24] The codename was chosen by Kevin Tebbit of the Ministry of Defence who telephoned London Zoo and asked for the name of an animal like an Antelope. He was given the name 'Chevaline'. British Academy Review webpage: http://www.britac.ac.uk/pubs/review/perspectives/0703cabinetsandbomb-2.html (accessed 19 June 2008).

[25] Panton, 'Politics and Strategic Background, 1964–1982'.

[26] At a working level the codename KH 793 continued to be used but all central government correspondence refers to the improvement programme as Super Antelope. Confidential correspondence, 6 April 2006.

[27] Operating with a minority government Wilson had called a second general election in October 1974 and had gained an overall majority of four seats.

[28] This is not unusual in specific discussions concerning the British nuclear deterrent. What is discussed in full Cabinet is the government's overall policy on nuclear weapons and even then discord is stifled by Cabinet collective responsibility.

[29] McInnes, *Trident: The Only Option?*, 13–4.

[30] Grove, *Vanguard to Trident*, 348.

[31] United Kingdom Parliament Page, http://www.parliament.the-stationery-office.co.uk/pa/cm199798/cmselect/cmdfence/138/13804.htm (accessed 11 November 2002).

[32] Ibid.

[33] The Secretary of State for Industry and then Energy.

[34] Ziegler, *Wilson*, 460.

[35] Benn, *Against the Tide*, 267–8.

[36] Ziegler, *Wilson*, 460.

[37] Confidential correspondence, October 2002.

[38] No delegated financial control existed for the project. This was later criticised by the findings of the Public Accounts Committee into the improvement programme in 1982. *Ministry of Defence: Chevaline Improvement to the Polaris Missile System*, Ninth Report.

[39] Panton, 'Politics and Strategic Background'.

[40] This was despite every effort having been made at the working level to meet the performance criteria laid down by the Royal Navy and the Chiefs of Staff. Confidential correspondence, 6 April 2006.

[41] Letter to the Editor by Vice Admiral Sir J. Roxburgh, *The Daily Telegraph*, 20 July 1990. Quoted by Panton, 'Politics and Strategic Background'.

[42] Private correspondence with Frank Panton, 24 September 2002.

[43] In arriving at this figure the Ministry of Defence was assisted by a working party report chaired by Fred East, a former Director of the Royal Armaments Research and Development Establishment (RARDE) based at Fort Halstead. Records Management, Operational Selection Policy OSP11, Nuclear Weapons Policy 1967–98, http://www.pro.gov.uk/recordsmanagement/acquisition/osp11nuclear.htm (accessed 2 February 2003).

[44] DEFE 13/1039 (TNA), *Top Secret UK Eyes A* MO 18/1/1 *Prime Minister Polaris Improvements*, 18 September 1975.

[45] The exclusion from Roy Mason's review of any consideration of Poseidon was due to the political difficulties associated with purchasing a second generation nuclear missile system for a Labour government with an entrenched wing of the party committed to unilateral disarmament. Panton, 'Politics and Strategic Background'.

[46] A number of subcontracts were issued to Vickers for the launching system, GEC for the fire control and test implementation subsystem, EMI for the weapon control subsystem simulator, BAC for the some elements of the construction of the Polaris missiles and Elliot and Sperry for the navigational aids and associated systems. All in all some 350 contracts were issued, 250 for development and 100 for production. McInnes, *Trident: The Only Option?*, 7.

[47] DEFE 13/1039 (TNA), *Top Secret UK Eyes A* MO 18/1/1 *Prime Minister Polaris Improvements*, 18 September 1975.

[48] The only remaining area of 'major technical risk' was the development of the sophisticated Penetration Aid Carrier (PAC). The PAC is a simplified 'Bus' which acted as carrier and to protect all the sub-systems needed to motor and eject discriminants, decoys and re-entry vehicles. TNA, DEFE 24/895, J.E. Hansford to R.A. Pearson, 20 August 1974 and confidential correspondence, October 2002.

[49] DEFE 13/1039 (TNA), *Top Secret UK Eyes A* MO 18/1/1 *Prime Minister Polaris Improvements*, 18 September 1975.

[50] DEFE 13/1039 (TNA), *Polaris Improvements*, 26 September 1975.

[51] DEFE 13/1039 (TNA), D.W.H. to Prime Minister, *Polaris Improvements*, 2 October 1975.

[52] As with all UK nuclear tests the first codename refers to the trial name and the second to the name of the warhead tested. Confidential correspondence, 6 April 2006.

[53] The Official Report, House of Commons, 5th Series, *Hansard*, 25 November 1975.

[54] Castle, *The Castle Diaries, 1974–6*, 227–8.

[55] McInnes, *Trident: The Only Option?*, 6.

[56] DEFE 13/1039 (TNA), *Polaris Improvements*, 26 September 1975.

[57] Reade, 'The Role of British Aerospace in the Chevaline Project'.

[58] A further consideration, according to Victor Macklen, was the realisation by the Secretary of State for Defence that until the RN had control of the programme they would not stop pushing for Poseidon. Panton, 'Politics and Strategic Background'.

[59] TNA DEFE 13/1039, *Extract from Note to S of S on Meeting with PUS at 5.30 pm*, 22 September 1975.

[60] As Panton himself recounts, 'it was always inevitable that, as a Naval project, managed by the Navy, a Naval officer would be appointed as head, even if only, in reality, a figurehead and that the technical staff under him would largely be drawn from the MOD R and D Establishments, then part of the Procurement Executive, headed by Sir Clifford Cornford'. He continues, 'I was asked by Cornford if I wished to be considered for the post of CSSE. I declined and asked to be moved out of the Defence nuclear scene. It was clear to me the past four years of progressing Chevaline in the face of determined opposition by the Navy had not endeared me to them, to put it mildly, and a post for me in the Navy, even if they would accede to my appointment ... would have placed me in a most difficult and essentially untenable position'. Panton concludes, 'Fred East was a good choice for that post, at RAE he had been responsible for that establishment's contribution to the development of other UK nuclear weapons, such as WE177, but he was not tarred with the Chevaline brush. It is interesting to note that, at East's insistence, his post of CSSE was at Deputy Secretary (three star) level, whereas Scott's post of Chief Polaris Executive, in charge of the Chevaline project, was at Rear Admiral (two star level)'. Private correspondence with Frank Panton, 12 October 2005.

[61] DEFE 13/1039 (TNA), *Annex B to Enclosed to DUS(P)377/75*, 25 October 1975.

[62] The role of the Royal Navy is well covered by Metcalf *et al.*, 'Role of MOD (Navy) Support Organisations'.

[63] DEFE 13/1039 (TNA), MO 18/1/1, *Note for the Record*, Record of a Discussion between the Defence Secretary and Admiral Sir Edward Ashmore, Chief of the Naval Staff held in the Secretary of State's Room at 4.30 on Thursday 30 October 1975.

[64] Ibid.

[65] DEFE 13/1039 (TNA), *Chevaline Management*, C.T. Sandars to PS/CPE, 16 December 1975.

[66] DEFE 13/1039 (TNA), *Senior Staff in Confidence*, 4 December 1975. The reorganisation of the project from 1975 through to completion is well covered by Orman, 'Evolving The Management of Chevaline'.

[67] During his first stint as Prime Minister there were discreet moves at the very highest levels of government to assist the French nuclear weapons programme with the *quid pro quo* of British entry into the EEC. See for example files contained in the class CAB 165/600 (TNA).
[68] These included European doubts about the 'neutron bomb', NATO Theatre Nuclear Modernisation and the eventual dual track decision.
[69] See for example DEFE 13/891 (TNA), Meeting with President Pompidou: Speaking Notes on Defence, 13 November 1973. See also Stoddart, *The Sword and the Shield*.
[70] Heuser, *NATO, Britain, France and the FRG*, 161.
[71] France had withdrawn from NATO's integrated military structure in 1966.
[72] DEFE 19/180 (TNA), PS/CSA to PS/PUS, 16 October 1974.
[73] DEFE 19/180, J.A. Thomson, 'French Thinking About Nuclear Weapons', 23 October 1974.
[74] DEFE 19/180 (TNA), Edward Peck to Admiral of the Fleet Peter Hill-Norton, 17 October 1974. It is not clear how much Labour knew of previous Conservative initiatives towards the French. See Stoddart, 'Nuclear Weapons in Britain's Policy towards France, 1960–1974'.
[75] DEFE 19/180 (TNA), E.E. Tomkins to Sir John Killick, 5 November 1974.
[76] DEFE 19/180 (TNA), A.P. Hockaday to Sir John Killick, 8 November 1974.
[77] Ibid.
[78] DEFE 19/180 (TNA), Bondi to Dr Harold Agnew Director Los Alamos Scientific Laboratory, 28 November 1974.
[79] DEFE 19/180 (TNA), J.A. Thomson to Sir E. Peck, 6 December 1974.
[80] DEFE 19/180 (TNA), John Killick to Sir E. Tomkins, 6 December 1974.
[81] DEFE 19/180 (TNA), C.C.C. Tickell to Mr Morgan Sir J. Killick, 21 March 1975.
[82] DEFE 19/180 (TNA), C.C.C. Tickell to A.P. Hockaday, 11 March 1975.
[83] NATO Basic Texts Page, http://www.nato.int/docu/basictxt/b740619a.htm (accessed 18 May 2007).
[84] DEFE 19/180 (TNA), *Intelligence note by DGI*, 27 May 1975.
[85] DEFE 19/180 (TNA), *DRIG Translation No. 4335*, Undated summer 1975.
[86] This was publicly revealed in 1989 by Richard Ullman and came as a surprise to many who had always believed (as the had French maintained) that no assistance had ever been given to the *force de frappe*. Ullman, 'The Covert French Connection'.
[87] DEFE 19/180 (TNA), J.A. Thompson to Mr. Wilberforce, 9 October 1975.
[88] DEFE 19/180 (TNA), J.A. Thompson to H of C, 12 May 1976.
[89] Ibid.
[90] Ibid.
[91] DEFE 19/180 (TNA), V.H.B. Macklen to DUS(P), 7 June 1976.
[92] DEFE 19/180 (TNA), *Note of a conversation between the Secretary of State and the French Defence Minister Monsieur Bourges during a flight from Exeter to Northolt in an Andover of the Queen's Flight on Monday 4th April 1977*, 5 April 1977.
[93] DEFE 19/180 (TNA), E.A.J. Ferguson to S of S, 25 April 1977.
[94] Ibid.
[95] DEFE 19/180 (TNA), S.W.A. Fuller to R.T. Jackling, 28 April 1977.
[96] DEFE 19/180 (TNA), V.H.B. Macklen to PS/S of S, 3 May 1977.
[97] Ibid.
[98] Ibid.
[99] Ibid.
[100] DEFE 19/180 (TNA), Dr A.W. Fox to AUS(OR), 28 October 1977.
[101] DEFE 19/180 (TNA), W.J. Challens to V.H.B. Macklen, 2 November 1977.
[102] Ibid.
[103] DEFE 19/180 (TNA), John Hunt to Sir Frank Cooper, 7 November 1977 and DEFE 19/180 (TNA), Frank Cooper to Sir John Hunt, 9 November 1977.

[104] DEFE 19/180 (TNA), V.H.B. Macklen to DUS(P), 14 November 1977.
[105] Ibid.
[106] DEFE 19/180 (TNA), *Nuclear Matters, France*, 21 November 1977.
[107] Ibid.
[108] Ibid.
[109] DEFE 19/180 (TNA), M.E. Quinlan to CDS, *PUS*, 29 November 1977.
[110] Ibid.
[111] Hennessy, *Muddling Through*, 125–6.
[112] DEFE 13/1039 (TNA), F.H. Panton ACSA(N) to DCA(PN), *Nuclear Test*, 19 February 1976.
[113] DEFE 13/1039 (TNA), V.H.B. Macklen DCA(PN) to PS/S of S, *Chevaline Nuclear Warhead Tests*, 27 February 1976.
[114] DEFE 13/1039 (TNA), Draft Note from S of S to Prime Minister, *Polaris Improvement Programme – Nuclear Testing*, 3 March 1976.
[115] There is video footage of this debate between Allaun and Mason available on the internet via the BBC website. BBC 'On this Day Page': http://news.bbc.co.uk/onthisday/hi/dates/stories/june/24/newsid_2526000/2526963.stm (accessed 26 June 2006).
[116] Mason, *Paying the Price*, 146.
[117] BBC, 'On this Day Page'.
[118] Mason, *Paying the Price*, 146.
[119] DEFE 13/1039 (TNA), F.H. Panton, ACSA(N) *Further Nuclear Test*, 3 October 1975.
[120] Ibid.
[121] DEFE 13/1039 (TNA), Roy Mason to Jim Callaghan, MO 18/1/1 *Nuclear Tests*, 29 October 1975.
[122] Ibid.
[123] This letter was also copied to the Prime Minister. DEFE 13/1039 (TNA), Roy Mason to Jim Callaghan, MO 18/1/1 *Nuclear Tests*, 29 October 1975.
[124] DEFE 13/1039 (TNA), Roy Mason to Jim Callaghan, MO 18/1/1 *Nuclear Tests*, 29 October 1975.
[125] Enviroweb.org, British Nuclear Testing Page, http://nuketesting.enviroweb.org/hew/Uk/UKTesting.html (accessed 20 January 2003).
[126] Freedman, *Britain and Nuclear Weapons*, 86–100. This would have been a test of a primary device used as the first stage to detonate a thermonuclear secondary.
[127] DEFE 19/181 (TNA), *Note for the Record Avis 202 Discussion with Harry L Reynolds Associate Director for Nuclear Explosives LLL*, 17 July 1978.
[128] DEFE 19/181 (TNA), V.H.B. Macklen to *PUS*, 15 August 1978. Callaghan gave his approval of this test (now due to take place later in December) on 2 October 1978. DEFE 19/181 (TNA), V.H.B. Macklen to Drake Seager, 2 October 1978.
[129] DEFE 19/181 (TNA), V.H.B. Macklen to Secretary of State, 23 November 1978.
[130] Owen, *Time to Declare*, 380–1.
[131] Ibid.
[132] Hennessy, *Muddling Through*, 120–9.
[133] Ziegler, *Wilson*, 460.
[134] DEFE 13/1039 (TNA), J.F. Mayne to Secretary of State, *Top Secret UK Eyes A Atomic Artificer*, 18 November 1975.
[135] Nessel was the American codename for the test, the British codeword was Dicel. DEFE 19/181 (TNA), *AWRE Aldermaston Classification Notice No. 40 Classification Guide for Dicel/Nessel*, 14 March 1979.
[136] DEFE 25/335 (TNA), V.H.B. Macklen DCA(PN), *British Nuclear Test Programme*, 23 October 1978.
[137] DEFE 19/181 (TNA), V.H.B. Macklen to *PS/S of S*, 23 October 1978.

[138] DEFE 25/335 (TNA), David Owen to the Prime Minister, *British Nuclear Test Programme*, 31 October 1978.

[139] DEFE 25/335 (TNA), FM to Prime Minister, *British Nuclear Test Programme*, 3 November 1978. This warhead was not compatible for the Mk. 3 re-entry vehicle used in Poseidon but it was a step towards a British equivalent of the warhead for the Mk. 4 re-entry vehicle for both the C-4 and D-5 versions of Trident. With the development work on the Chevaline warhead now completed, work had begun to focus on the next most likely requirement (the US Trident missile). The lead-in time for a UK warhead was likely to be long and needs had to be anticipated if designs were to be available when required. Confidential correspondence, 6 April 2006.

[140] DEFE 25/335 (TNA), V H B Macklen DCA(PN) to Secretary of State, *British Nuclear Test – 20 November 1978*, 23 November 1978.

[141] DEFE 25/335 (TNA), FM to Prime Minister, *British Nuclear Test Programme*, 3 November 1978.

[142] DEFE 25/335 (TNA), David Owen to Prime Minister, *PM/78/125 British Nuclear Test Programme*, Undated, 16 November 1978.

[143] DEFE 19/181 (TNA), David Owen to Prime Minister, 16 November 1978.

[144] Macklen found Owen's minute 'not very helpful' from the MoD's point of view. DEFE 19/181 (TNA), V.H.B. Macklen to Secretary of State, 22 November 1978.

[145] DEFE 25/335 (TNA), G.G.H. Walden to B.G. Cartledge, *British Nuclear Test Programme*, 28 November 1978.

[146] DEFE19/181 (TNA), Bryan Cartledge to R.L.L. Facer, 1 December 1978.

[147] DEFE 25/335 (TNA), *SCDS(B)1* to PSO/CDS, *British Nuclear Test Programme*, 30 November 1978.

[148] DEFE 25/335 (TNA), Bryan Cartledge to Roger Facer, *UK Nuclear Test Programme*, 1 December 1978.

[149] Private correspondence with Frank Panton, 12 October 2005.

[150] Ullman, 'The Covert French Connection'.

[151] Malone, *The British Nuclear Deterrent*, 114.

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