# PLANNING THE DEFENCES OF WORLD WAR III: THE POST-WAR BRITISH EMPIRE AND THE ROLE OF THE AUSTRALIA AND SOUTH AFRICA, 1943-1957

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**Verdedigingsbeplanning vir die Derde Wêreldoorlog: Die na-oorlogse Britse Ryk en die rol van Australië en Suid-Afrika, 1943-1957**

Hierdie artikel ondersoek die rol van die na-oorlogse verdedigingsbeplanning van die Britse Ryk met spesifieke verwysing na kernwapens. In die tydperk voor die herstel van atoombetrekkinge met die VSA, het Brittanje na sy suidelike Dominiums gekyk om kern afweerwapens te ontwikkel. Australië en Suid-Afrika het nie alleen oor afgesonderde gebiede sonder nabygeleë industrieë of bevolking beskik nie, maar ook oor uraan, splytbare materiaal, wetenskaplike mannekrag en toetsgronde. In hul beplanning vir globale oorlogvoering het albei Dominiums die noodsaaklikheid van gevorderde verdediging besef. Australië het na Maleisië ontplooi, terwyl Suid-Afrika hom besig gehou het met lugverdediging tot op 'n lyn noord in die omgewing van Mombassa. Albei Dominiums het 'n rol in die verdediging van die Midde-Ooste gespeel en dit is moontlik dat albei beplan het om oor kernwapens te beskik. Hulle wou beslis die reaktortegnologie gehad het wat daardie opsie moontlik sou maak. Na 1957 het Australië daarvan teruggetree — Suid-Afrika het nie.

This article explores the role of the post-war British Empire defence planning with particular reference to nuclear weapons. In the period before the restoration of atomic relations with the US, Britain looked to the southern Dominions to develop nuclear deterrent weapons. Australia and South Africa not only provided remote areas to disperse industry and population, but also provided uranium, fissile material, scientific manpower and test sites. In planning for the actual execution of global war both Dominions considered the need for forward defence. Australia deployed to Malaya while South Africa was concerned about aerial defences to a line north in the area of Mombassa — the location of the British strategic reserve. Both Dominions planned a role in the defence of the Middle East and arguably both planned on the possession of nuclear weapons. They certainly wanted the reactor technology that would preserve that option. After 1957 Australia backed away — South Africa did not.

There has been a vast literature on Britain's attempts to restore relations with the US from the Second World War to the landmark Bermuda Conference in 1957.[1] In this period Washington attempted to exploit its dominance in nuclear weapons and refused to share secrets either with the United Nations or key allies like Britain. Traumatised by the aerial blitz of the Second World War Britain would 'never again' risk such a war.[2] 'Passive defences' like fighter interceptors could not guarantee the safety of the small island. The ultimate safeguard was an 'active deterrent' that would allow effective retaliation. While always aware of the need to harness American support here, London moved to base its defences on a reinvigorated Empire. To be sure the Empire of old was no more. The Royal Navy no longer ruled the waves and India was no longer the brightest jewel in the Crown. There was, however, a new role for the Empire, one that took full account of air power and nuclear weapons. From 1943 to 1957 the Empire was to play a crucial role in British atomic strategy. The central assumption of Empire planning was that in a future war Australia and southern Africa would be a 'main support bases' in global war.

## 1. The beginning of Empire defence cooperation 1943-1947

Before the final decision in 1947 by London to go ahead with an independent atomic program there was the hope that Canada would continue to host a Commonwealth program, even if the Americans refused co-operation. This meant that the experimental plutonium-producing pile at Chalk River near Ottawa was of great potential importance to the future of the British program. The Americans, however, were clearly in a position to dictate terms in Canada.[3] It was American money that rescued the Canadian uranium company El Dorado in 1941 and thereafter the US succeeded in locking up Canadian Shield ore supplies on a long-term basis, effectively until the 1960s.[4] In 1947, when the Canadian reactor at Chalk River became operational the North American Defence Board called the shots — hemispheric rather than Commonwealth defence was the name of the game.

Canada, however, was not the only other site available to the British. Any attempt to construct deterrent weapons would involve the resources of the Empire on a vast scale — indeed one that would attempt to match the war-time Manhattan Project that had produced the atomic bomb. While the need to do this became manifest after the Americans banned the sharing of nuclear technology with the passage of the Mcmahon Act in 1946, the ideas dated from the Quebec Conference in 1943. In the aftermath of that

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The classic work is Margaret Gowing's *Independence and deterrence: Britain and atomic energy 1945-1952* (London, 1974). Roger Louis and Hedley Bull have compiled a collection of essays by some of the most significant authors in *The 'special relationship': Anglo-American relations since 1945* (Oxford, 1986). See also Ian Clark and Nicholas Wheeler, *The origins of nuclear strategy, 1945-1955* (Oxford, 1989); Ian Clark, *Nuclear diplomacy and the special relationship: Britain's deterrent and America, 1957-62* (Oxford, 1994).

2. Peter Hennessey, *Never again: Britain 1945-1951* (London, 1993). The first airborne offensive had occurred in 1940, but 1944 saw the use of V1 and V2 rockets. Fortunately for Britain, the German flirtation with atomic weapons had not proceeded beyond the experimental stage. Nevertheless the Blitz was, in Hennessey's estimation, 'the starting point for modern Britain'. 'Never again' would the island be exposed to the threat of attack form the air.
3. Robert Bothwell, *Nucleus: The history of Atomic Energy of Canada Limited* (Toronto, 1988), p. 22.
4. Robert Bothwell, *Eldorado: Canada's National Uranium Company* (Toronto, 1994).

limited atomic agreement between the Americans, British and Canadians there was a reassessment of the bonds of Empire. Ironically, the new view of Empire was put most forcefully by the Secretary of State for India, Leo Amery. In Amery's opinion the Empire would allow Britain to disperse its population and industries so that in future the defence potential would not be destroyed in the event of an air attack on the British Isles. He also envisaged the construction of overseas bases which would provide munitions standardised with those of Britain. These support areas, in Amery's view, would be responsible for Empire defence 'zones'. Australia and New Zealand would form the nucleus in the Pacific. South Africa would be the base for an area 'stretching as far north as Kenya'.[5]

The ideas of Amery found powerful support. The Colonial Office in 1943 had argued that there was a need to strengthen imperial ties with Africa while Liddell Hart, the man who had once predicted the role of the tank in modern warfare, convinced Labour leader Clement Attlee that British imperial power could be shielded behind the Sahara. The Defence Committee also agreed with Amery's view that there should be large-scale immigration to Africa and Australia in an era when Britain was vulnerable to atomic attack.[6] Herein, Britain's survival depended on a reinvigorated system of Empire defence and in 1944 Ernest Bevin wanted to ensure that the Dominions would make 'binding commitments' while the Chiefs of Staff developed plans for regionalising the defence of the Empire. In May the War Cabinet's Armistice and Post-War Committee prepared a major report on Empire defence with particular reference to past progress on weapons standardisation, common training and staff exchange arrangements. The needs of modern airpower and the importance of industrial mobilisation, they stressed, gave these elements of cooperation a new emphasis.[7] Of equal importance, both of Labour's Cold War leaders, Attlee as Prime Minister, and Bevin as Foreign Minister, shared a vision on the importance of the Commonwealth.

The United Kingdom Government, as a result, put forward proposals in early 1946 for a much more centrally coordinated system of Empire Defence which was to be the basis of planning until 1957. The system would use the resources of the Empire to support Britain, the heart of the Empire. The Chiefs of Staff had concluded in early 1946 that in the event of a 'major war the United Kingdom could not be regarded as the sole base for the whole Commonwealth'. In the atomic age the Commonwealth would have to act as a unit. The strategic conception for Commonwealth defence, argued the Chiefs, was

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5. Letter, Amery to R.H. Heindel, n.d. [1944], Box 106, Lilienthal Papers, Princeton. This observation, in the light of Ovendale's suggestion that Kenya would provide the staging base for the Middle East in the Cold War, reveals that Britain had a model for regional defence well before that period. Ritchie Ovendale, *The English-speaking alliance: Britain, the United States, the Dominions and the Cold War, 1945-51* (London, 1985), Ch. 9.

6. John Kent, *British imperial strategy and the origins of the Cold War, 1944-49* (Leicester, 1993), pp. 8, 100 & 148.
'Post-War Defence Organisation', APW(44)17, 9 May 1944, CAB 127/38, PRO. There were far-reaching plans for air communication. In 1946 modern air communications promised to open Africa to Empire as never before. R. McCormack, 'Imperialism, air transport and colonial development: Kenya, 1920-46', *Journal of Imperial and Commonwealth History* 62(3), May 1989, p. 389.

> the security of the United Kingdom, of the Dominions and the communications between them. The security of the United Kingdom was vital, but to limit our strategy to the local defence of this country would permit an enemy to concentrate his entire effort against us, without our being in a position to hit back.[8]

The strategic partnership between Britain and the southern Dominions was forged at the May 1946 Prime Ministers' Conference in London.[9] British delegates stressed that the development of heavy industry, munitions, and aircraft in the Dominions was desirable given the vulnerability of the British Isles.[10]

At the same time there was another conference, which has not received attention from historians. Empire science delegates met in London at the inappropriately labelled 'Informal' Commonwealth Conference on Defence Science.[11] The chairman of the conference, a key architect in the planning for Britain's nuclear deterrent forces, Sir Henry Tizard, told delegates that they could expect to benefit from biological and atomic research 'within ten years' — i.e. about 1956-57.[12] At the first plenary session of the conference, he stressed that the

> atomic bomb might yet prove a blessing. The British Commonwealth was an example of how nations, while still retaining their own sovereignty, could yet set aside these boundaries and work together for the common good. In the past, concentration in time of war had been a source of strength, but this era was passing and there was a tendency to disperse both population and scientific brains for the more successful prosecution of the war.[13]

That was the carrot but the British had a more immediate concern. What Tizard wanted urgently was Dominion scientific manpower.[14] In May 1946 the Barlow Committee, which had studied the problems of strategic dispersal of industry and manpower planning since the outbreak of the war, advised that there were grave shortages

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8. DO(46) 22nd meeting, 19 July 1946. Public Record Office, London (PRO).
9. The section on the formation of the Joint Intelligence Bureau has been removed from the Archives but it is clear that a mission from Britain to Australia prior to the 1946 Commonwealth Conference had launched significant initiatives here. Intelligence links were to be strengthened and defence science machinery was developed on British lines. Item 1662/1, A5954/1, Australian Archives, Canberra (AA).
10. Item 1634/6, A5954/1, AA.
11. Letter, Attlee to Tizard, 3 May 1946, Item 753, PREM 8, PRO.
12. Tizard chaired the scientific committee that recommended in July 1945 that Britain should undertake large-scale development of atomic energy and delivery systems. His report set out the parameters of British strategic defence strategy. Humphrey Wynn, *RAF nuclear deterrent forces* (London, 1994), pp. 1-2. 1957 was the planning date accepted by the British Chiefs of Staff for the point at which the Soviet Union would be able to wage nuclear war.
13. ICCDS, 1st meeting, 3 June 1946, DO35/1759, PRO.
14. The Cabinet Defence Committee later concluded that 'the limiting factor' was the lack of sufficiently qualified scientific staff. The United Kingdom, however, 'could offer more facilities for post-graduate training than can any of the other countries of the Commonwealth'. DO(48)4, 6 Jan. 1948, Item 753, PREM 8, PRO.

in scientific manpower.[15] Now this situation was to be exacerbated by a leap into vast program of developing deterrent weapons — atomic bombs and their complex delivery systems.[16] Tizard, therefore, explained that there was a 'vast amount of scientific research work' to be done in the defence field but that this would have to be shared by virtue of the 'limited resources' and the 'geographical position' of the United Kingdom. 'It was unlikely', he confessed, 'that any single country in the Commonwealth would be able to provide all that was required to develop any one of these items, and co-operation was therefore essential'. The United Kingdom was, therefore, 'in favour of the fullest co-operation' with the Dominions in the field of defence science and all that such co-operation implied'.[17]

The meaning of the last clause was not lost on the Australians. Major General L.E. Beavis, the leader of the delegation, said that Australia intended to 'devote every effort to making any co-ordination arrangements a success and to play the fullest part in Commonwealth Defence Research'. Beavis was particularly keen to discuss atomic research. And as Australian Prime Minister Ben Chifley knew from Attlee, this meant the use of plutonium for bombs — the prospects of electric power were well down the track.[18] Australian delegates also argued that the proposed Woomera Rocket Range, which was also agreed in 1946, be extended to 3 000 miles, well over the Indian Ocean. A range of that size would be required for a future generation of intercontinental ballistic missiles, which in the late fifties would see the testing of 'Black Knight' and 'Blue Streak' missiles. The testing of atomic weapons was hinted at by the requirement identified at the conference that the Australian range would have to provide visibility up to 40 000 feet, the safe ceiling for the release of free-fall atomic bombs.[19] In other words, there is a very strong suggestion that an in-principle decision to test nuclear weapons in Australia was taken at this conference.

South Africa had not been known for its imperial sentiments before the war, despite the reputation of Prime Minister Jan Christiaan Smuts. At the conference, however, their delegation was every bit as enthusiastic about the prospects for cooperative research in defence science as the Australians. They were especially keen to train scientists at the experimental reactor at Harwell near Oxford. On the question of conducting tests Brigadier B.J.F. Schonland, the president of the Council for Scientific and Industrial Research (CSIR) and leader of the delegation, spoke of the possibility that 'silted dams' might be used for 'certain trials' involving large-scale concrete structures for use in attack or defence. The Conference was told that Britain could not conduct these trials since the range at Shoeburyness, with a radius of 3 to 4 square miles, was already

15. By 1955 the Committee estimated that the British universities could only produce some 55 000 to 60 000 scientists, when at least 70 000 were needed. CP(46)185, 3 May 1946, CAB 129/9, PRO.
16. 'Correspondence about Chalk River and Harwell', CKFT 25/19, Cockcroft Papers, Cambridge.
17. ICCDS, 1st and 3rd meetings, 3 June 1946, DO 35/1759, PRO.
18. Chifley had been advised by Attlee on 17 October 1945 that the production of plutonium for power could not be separated from the simultaneous production of bomb-grade material, a factor ignored by Alice Cawte, *Atomic Australia, 1944-1990* (Sydney, 1992). The letter described the British predicament in World War Two when they had to move industry to less exposed parts of the island. Letter, Attlee to Chifley, 17 Oct. 1945, Item 1662/1, A5954/1, AA.
19. ICCDS/17(Final), 4 July 1946, DO 35/1759, PRO.

inadequate for bombing trials. The need 'ultimately' was for a range of 20 miles or more 'for atomic bomb trials'.[20] The location was not disclosed.

At the end of 1946 the British Government was modelling Britain's defence for the atomic age and one that mapped out a new role for the Empire. What the British were in fact doing was developing their own Manhattan Project.

## 2. Base areas — southern Africa

Amery had been impressed by the possibilities of constructing a scheme like the Tennessee Valley Authority (TVA), which had been the hearth for the Manhattan Project, in southern Africa. He minuted the Secretary of State for Dominions Affairs, Lord Cranborne, on 1 February 1944, that South Africa would provide an industrial base in accordance with the need to disperse the industrial resources of the Empire. It is noteworthy that these remarks were made in the context of the world survey of uranium in 1944 which had been prepared for the Manhattan Project. This survey had indeed concluded that there were rich uranium deposits in Northern Rhodesia and radium and pitchblende ores in South West Africa (Namibia) and near Johannesburg.[21]

Beyond that there was a potential need to locate plutonium-producing reactors in safe areas which had access to cooling waters. The Kafue and Kariba Schemes in southern Africa were investigated in 1944 — the same time as the investigations into the Snowy River area in Australia.[22] They were designed to harness hydroelectricity for Central Africa and were also to provide irrigation. They were also close to sources of uranium.[23]

Smuts had similar views to Amery. He was not new to planning the strategy of the Empire. He had served on the British War Cabinet during the Great War and in 1917 chaired Lloyd George's 'Committee on Air Organisation and Home Defence Against Air Raids', which laid the foundation of air defence policy for the next thirty years. Before the war was finished Smuts knew that Britain could not withstand a prolonged assault from the air. Not surprisingly, he argued nearly three decades later, at the 1944 Commonwealth Prime Ministers' Conference, that the post-war Empire should 'behave as much as possible as a unit to retain its position as a leading power'.[24] Significantly, Smuts looked forward to cooperation with Britain in developing air links on an Empire basis.[25] He also took an early interest in atomic power and approached Ottawa's Director of the National Research Council, C.J. Mackenzie, in June 1945 about the place of science in future South African national policy.[26] As far as the Canadians were

20. 'Location of facilities for the large-scale testing of concrete structures for use in attack or defence', Annex L, ICCDS/17 (Final), DO35/1759, PRO.
21. EG1/119, PRO.
22. Wayne Reynolds, 'Atomic war, Empire strategic dispersal and the origins of the Snowy Mountains Scheme', *War and Society* 14(1), May 1996.
23. Item 5704, DO 35, PRO.
24. 'Post-war defence: Cooperation with the Dominions', Item 1744, DO35, PRO.
25. APW(44)17, 9 May 1944, CAB 127/38, PRO.
26. Diary 19, 28 June 1945, MG30, B122, Vol. 2, Mackenzie Papers, Ottawa.

concerned there was opinion that South Africa should be taken into 'the inner circle' since 'they certainly know the whole picture'.[27]

In fact there had been general investigation south of the Sahara for TVA-type sites after the mid-year Commonwealth conferences in 1946. Smuts, who was in London for the Commonwealth Prime Ministers' Conference in May, told the Chief of the Air Staff, Lord Portal, that South Africa would in future 'face two ways', towards uranium as well as gold. In June, Schonland and Professor Tavener, the director of the South African Government Metallurgical Laboratory, visited London with a view to setting up a pilot-purification plant in South Africa. Smuts thereafter oversaw a program of staff recruitment and equipment purchase to investigate ores. The objective was to start uranium production by 1948 and produce about 1 000 tons by 1952.[28] In October 1946, a British Industrial Mission, which included the Chairman of the English Steel Corporation, the Deputy Chairman of Vickers Armstrong Ltd. and Lieutenant General Sir Ronald Weeks, arrived in South Africa with the intention of surveying the market and studying the possibility of setting up a manufacturing organisation in the Union. The long-term objective of the survey was to further decentralise British industry.[29]

It was against this background that Bevin developed the idea at that time of an atomic energy plant being constructed at the Victoria Falls. This might explain why in early 1947 Smuts had developed the view that the Cape would be one of the cardinal points in world defence.[30] It was not surprising, therefore, that in July 1947, when Britain decided to progress with its own program, the idea of a plutonium-producing reactor was proposed. The Director of the British atomic research reactor at Harwell, Sir John Cockcroft, agreed that the project was technically feasible and Attlee approved plans to bring Schonland, then President of the CSIR in Pretoria, to Britain for discussions.

Building a TVA-type scheme in Africa, however, produced particular difficulties. Lord Alexander, on behalf of the Chiefs of Staff, wrote to the Dominions Office on 3 July with the observation that the Victoria Falls were at the boundary between Southern and Northern Rhodesia. The project would also require the cooperation of South Africa with Rhodesia. Creech Jones at the Colonial Office, weighed in with the comment, four days later, that

> anything which gave South Africa a major say in the development of part of the colonial empire would be politically dangerous ... the Central African Council, which represents the two Rhodesias and Nyasaland, has under examination extensive schemes for the production of hydro-electric power in the Zambesi Valley before the Victoria Falls. The bearing of an atomic energy project on this would have to be considered.[31]

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27. Letter, A. Henney, Chairman Advisory Panel on Atomic Energy, to Mackenzie, 2 June 1948, Vol. 3, MG30, B122, Mackenzie Papers.
28. Gowing, *Independence and deterrence*, pp. 379-380.
29. Despatch 35/1946, Australian High Commissioner, Pretoria, A4231, AA.
30. Despatch 53/47, Australian High Commission, Pretoria, 14 June 1947, A4231, AA.
31. Letters, Alexander to Addison (3 July) and Creech Jones to Addison (7 July), Item 249, DO35, PRO.

Nevertheless, the major concern was that the site have access to a major source of water and be not too far distant from the Belgian Congo.[32] The project itself was essential and Portal and Tizard noted on 16 July that the establishment of an atomic energy plant in South Africa would have to proceed 'as part of a Commonwealth plan'.[33] The extent of British thinking was evident in a note that the CSIR sent to the British Embassy in Washington in November 1947:

> [T]he TVA had to possess powers in six States. There are many regions of the world where a like approach might provide astounding results but where the division of the land into a number of small political units [is a problem]. This is already recognised in British colonial development in this period of the Third Empire.[34]

The accession of the Malan Government in 1948 did not change the basic direction of South African foreign policy. Gowing argues that Malan disliked Smuts' projects and that a uranium deal was not signed accordingly until 1950.[35] Ovendale has shown, however, that the Nationalists were terrified of communism and the South African defence forces were entirely dependent on Britain for equipment and technical knowledge.[36] That was also true of cooperation in defence science with the inclusion of South Africans into the British atomic program.[37]

Indeed the steady progress of establishing a base in South Africa was given emphasis by the failure of the US to extend planning beyond North America before 1949 and by the deteriorating international position. In January 1949 the British Joint Planning Staff reported that

> the Union of South Africa, Southern Rhodesia and Eastern and Central African British Territories have an important role to play in the event of war. Firstly the industrial developments which are now taking place there, especially in Southern Rhodesia and South Africa, enhance the value of the African continent as a support area. This is particularly important in view of the vulnerability of the United Kingdom. Secondly, it is hoped that these countries will provide forces not only for their own local defence but also for the defence of the African continent as a whole. We visualise that these latter forces would be deployed in the Middle East.[38]

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32. The A3 Route that linked British possessions to the Congo hinterland had been surveyed in 1946. Another route was the A4 which linked the South Congo only. The costs were considerable but the Dominions Office was advised to ensure that South Africa was informed of Britain's investigations into providing an overland route from the Cape to Kenya. DO(47)27, 17 March 1947, CAB 131/1, PRO.
33. Letters, Alexander to Addison, 9 July 1947, and File note by Richard Wood, 16 July 1947, Item 249, DO35, PRO; Gowing, pp. 148-150.
34. Letter, CSIR to Inverchappel, British Embassy, Washington, 24 November 1947, Item 552, CAB 124, PRO.
35. Gowing, *Independence and deterrence*, p. 381.
36. Ovendale, *The English-speaking alliance*, p. 251.
37. CW(49) 5th meeting, 24 November 1949, DEFE 9/15, PRO.
38. JP(48)122(Final) 7 January 1949, DEFE 4/19, PRO.

The South Africans, in planning discussions with the British in April 1949, had a 'strong desire' to discuss industrial mobilisation. In that context they wanted to plan the regional defence of Africa, including the uranium and copper belt, in terms of Allied strategy. The British Joint Planning Staff visited South Africa in June, the same month that the Australian Defence Committee endorsed the British Joint Planning Report for the defence of the Middle East in the event of global war. While there they ran into the same issues that had developed in Australia, namely

> that the size and timing of the contribution of these three [Australia, South Africa and New Zealand] would depend to a great extent on what arrangements we could make to help in providing their forces with modern equipment.

Pointedly, the US was concerned about the possibility of an African Pact and a Pacific Pact resulting from these discussions.[39] They were also concerned about the release of atomic information to 'third parties' at this time i.e., the southern Dominions.[40]

Empire planning for war in 1950 took on an added urgency with the outbreak of war in Korea and the threat that nuclear weapons might be employed. Canberra accepted the need to send forces to the Middle East, but in a repeat of World War Two strategy, wanted to bolt the northern approaches at Singapore. As a result in June, Australia sent its first forces since the end of the war forward into Asia — Lincoln Bombers to Malaya. From there they could be deployed to the Middle East or be directed to strike targets in China.

The South Africans were on a similar course. On 6 June they signalled their consent to send troops to the Middle East but were very concerned about plans to protect South Africa from attack by air. In September the South African Minister for Defence, Mr. F.C. Erasmus, argued that South Africa might have to consider the construction of a 'defensive bastion' to protect herself in the event that the Middle East was overrun, on a line running west from Nairobi. What is of interest here is that both Kenya and Malaya were to be future locations for siting the Commonwealth Strategic Reserve.

The South Africans were, like the NATO Allies and Australia, concerned about the weapons with which they would fight in a global war. The British wanted an active deterrent - the Domionions were not different. In considering this the Chiefs of Staff thought that the Dominions should be given papers on global war planning but on the question of equipment

> it would probably first be necessary to make available equipment for training purposes and later on we might have to provide a stockpile in the Middle East ready for Commonwealth forces when they arrive. If we therefore want to give any preferential treatment to South Africa we should

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39. COS(49)55th meeting, 13 April 1949 and JP(49)18(Final[Revise]), 22 April 1949, DEFE 4/21, PRO; Ovendale, p. 255.
40. COS(49)100th meeting, 13 July 1949, DEFE 4/22, PRO.

bear in mind the possibility of subsequent reactions from Australia and New Zealand.[41]

**Base areas - Australia**

Despite the emphasis in the historical literature on the US alliance and the role of conventional war planning in the South East Asian region, the development of Australian defence policy was undertaken in the context of a reassessment of the future role of the Empire. The Australian Defence Committee's 'Strategic Appreciation of Australia', prepared for Prime Minister Ben Chifley, who was about to depart for the Commonwealth Prime Ministers' Conference in February 1946, laid down the guiding principles of Australia's defence that were to serve as the main working policy for the next decade. Empire defence was to be the key. The defence planners concluded that the 'full development for plans to coordinate the defences of the Empire was fully vindicated by the experience of the Empire during the war'.[42] The southeast of Australia should be developed, the committee concluded

> as an arsenal in the Pacific, analogous in function to that which the United Kingdom fulfils in the Atlantic. Resources should be developed in time of peace in different parts of the Empire for the manufacture of munitions, as well as the supply of raw materials, with the objects of reducing the dependence of the Commonwealth on the United Kingdom, and of dispersing resources for manufacture and supply from areas vulnerable to attack... Superior scientific development can, if secrecy be preserved, redress the balance between a weak nation and a strong one and this is of profound significance to Australia.[43]

Australia's role after 1946 in hosting the 'Joint Project' at Woomera is well documented. There is, however, a strong suggestion that cooperation was not confined to nuclear delivery vehicles. The British Atomic Energy Technical Committee met on 25 June 1947 and discussed the construction of a 300 000 kw atomic pile. The Australian nuclear physicist, Marcus Oliphant, who was at the meeting, said that it was 'essential' that such a plant be built 'at once' so that the British Commonwealth could 'remain the leader' in atomic research. Oliphant also suggested that the plant be built 'in one of the Dominions'.[44] Oliphant's ambitions for an Australian role in atomic development had

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41. COS(50)91st meeting, 19 June 1950; JP(50)80(Final) 30 June 1950; MISC/M(50) 34, DEFE 11/324, PRO.

42. On the background to the Australian policy see Reynolds, Wayne, 'H.V.Evatt: The imperial connection and the quest for Australian security, 1941-1945', Ph.D Thesis, Universith of Newcastle (Australia), 1985 and Ken Buckley, Barbara Dale, and Wayne Reynolds, *Doc Evatt* (Melbourne, 1994), Parts 3 and 4.

43. Item 1662/4, A5954/1, AA.

44. Atomic Energy Technical Committee, 3rd meeting, 25 June 1947, Box 2/5, CHAD 1, Cockcroft Papers. Oliphant was a central figure in the initial Tube Alloys program and was to be arguably the chief architect in the Chifley Government's decision to enter the atomic field. He argued successfully the case for an Empire defence science effort that would ultimately see the transfer of much research and development to Australia. He was to head the research effort at the ANU with a team after 1950.

long been apparent. He returned to Australia after Pearl Harbour to help with radar and warned Australian Prime Minister John Curtin about safeguarding the nation's uranium supplies. In September 1942 the question of uranium exploration was brought before the Production Executive committee, when it was concluded that uranium was not only of interest as a source of industrial power, but also from the point of view of 'international warfare'. The Government immediately reserved the control of uranium-bearing ores to the Crown and a survey was commissioned.[45] In early 1943 Oliphant returned to Britain and reported that there was 'considerable official interest' in Australia in atomic developments.[46]

While Oliphant saw out the war as part of the Manhattan Project he had also been thinking about an independent British project, one in which there was a prime place for Australia. The opportunity to voice these came in September 1945. The atomic bombs had only been dropped on Japan the month before and the British Government was keen to mount its own atomic program. Sir John Anderson headed the so-called Gen 75 Committee, which coordinated the British atomic program, and that month approved the construction of an atomic research establishment. It was at this juncture that Australia's official interest intensified. The Australian Minister for External Affairs, Dr. H.V. Evatt, was visiting London as part of a general round of meetings on the post-war settlement.[47] Oliphant gave him an account of the recently-constituted Gen 75 Committee — which Evatt immediately wanted to join — and canvassed the problems of Anglo-American atomic cooperation during the war. One aspect of the briefing which caught Evatt's attention — and that was to prove to be of great significance in the future — was Oliphant's revelation that the United States was anxious that large-scale production of atomic energy should be confined to the North American continent.

Oliphant, on the other hand, put forward his idea of an Empire program. He told Evatt that the Australians could not enter the new field without help. The point of entry was through cooperation with Britain which, he said, could make the atomic bomb 'whenever she had the courage to set to work'. Britain had to be particularly careful, he went on, 'not to be outstripped in the production of Bombs. We must take care to avoid becoming a lesser power'.[48]

Evatt wrote directly to Attlee about Australia's 'lively interest in atomic energy', particularly since it had limited coal reserves and no indigenous oil supplies. He wanted access to the Anderson Committee's report on the plans to construct an experimental pile and to contribute to an Empire scheme of research and development. The case was based on the contributions of Australian scientists like Oliphant, 'who have made important contributions to the development of the atomic bomb'; the use of scientists as part of an Empire research program; 'extensive deposits of Thorium'; and 'for later development we have in Australia large open spaces and continuing resources of hydroelectric power, both of which would be useful if full-scale plants were to be erected for the production of raw

45. Cawte, *Atomic Australia, 1944-1990* (Sydney, 1992), p. 3.
46. Letter, Oliphant to Chadwick, 10 March 1943, Box 19/3, CHAD 1, Cockcroft Papers.
47. It was certainly not the case that the Australian Government 'knew nothing' at this stage, as Gowing asserts, but it was important to keep abreast of the rough and tumble that constituted atomic diplomacy at this stage. Gowing, *Independence and deterrence*, p. 146.
48. *Sydney Morning Herald*, 17 October 1945.

materials'.[49] It is the latter reference that suggested that Evatt, like Smuts, was by then aware of the importance of base areas in the Empire, but was it to be acted upon?

The heart of the Chifley Government's programs for the development of Australia after the war was the Snowy Mountains Scheme. It was to be a great magnet for immigrants and overseas capital and was to provide the electricity that would be required for modern industry. It has also been associated in many minds with the irrigation of Australia's arid interior. All of these features describe what the Scheme became — but the origins were based on very different premises. There is every reason to suppose that the construction of a Commonwealth pile in Africa, in line with Empire policy on base areas, was also applied to Australia. That had been foreshadowed by Amery and it was at that precise juncture, July 1947, that the Australian Government requested information on the Harwell low-energy pile. The following month the annual Premiers' Conference in Australia was presented with an additional agenda item. A project would be launched to build a system of power stations inland in the region of the Snowy River system.[50] The project was to be undertaken on the grounds of defence — in order to overcome the problem of the States and to draw on the precedent of the TVA. Existing power stations were near the coast and vulnerable to attack.[51] The Snowy stations, on the other hand could be sited inland where they were safe. Moreover, a number of stations could be built underground, making them invulnerable to air attack. This report was presented, and, in the words of the Lionel Wigmore, the official military historian who had written a little known history of the project, it received 'rather summary treatment' as the Premiers got into the business of deciding which state would benefit and whether the emphasis should be on irrigation or power.[52]

Interestingly the launch of the Snowy Scheme coincided with a report to the Ministry of Power in Britain by the Vice Chief of the General Staff which in essence argued the need to build power stations underground between 1947 and 1950. The Ministry responded by noting the problem of siting the stations in Britain according to needs of industrial dispersal:

> The directive cannot be readily applied to power stations because [they] must be near an abundant supply of water. They would be put out of action if a burst of an atomic bomb [took place] within one mile.

The Ministry noted the tendency of industry to concentrate around sources of power and concluded that in any event British power stations would be vulnerable to V rockets by 1950:

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49. Letter, Evatt to Attlee, 14 October 1945, Gen 75/7, Item 112, PREM 8, PRO.

50. The report had been prepared by the Snowy River Committee which had been set up after the Commonwealth Prime Ministers' Conference and at the same time as the Defence Science Conference, in June 1946. A2618/1, AA.

51. The Snowy Mountain scheme was among a small number of pioneers in this respect. In 1964 Guthrie Brown published his weighty account of *Hydro-electric engineering practice* (London) and concluded then that such practices were the exception. They were, however, 'bomb-proof' and allowed the possibility of developing much larger plants.

52. Lionel Wigmore, *Struggle for the Snowy: The background of the Snowy Mountain Scheme* (Oxford, 1968), p. 120. Wigmore was the author of *The Japanese thrust in the Australian Army series of the Second World War.*

> With the use of only 19 atomic bombs an enemy could destroy the United Kingdom's ability to wage war. The expansion by 50% of the electricity capacity between 1951-60 gives an opportunity to lessen the vulnerability of the system. The idea in the next 13 years would be to have progressive reduction of vulnerability to atomic air attack. Herein the capacity of the largest power stations should not be increased. Capacity of new and extended stations should not exceed 300,000 kw. Strategy and other factors affecting the location of power stations, and the scale and accuracy of atomic attack should be kept under review.[53]

Despite elaborate attempts to secure industry by dispersal, including the location of vulnerable power facilities underground, there was only one conclusion that could be drawn about the impact of atomic weapons. The Home Defence Committee reported after a lengthy study that

> the only practical assumption on which planning for passive defence could proceed was that the enemy could and would use weapons of mass destruction ... it would be quite impracticable to provide passive defence to sustain a war effort on anything like the 1939-45 scale without wholly disrupting the economy of the country. At this stage of the proceedings the suggestion has been made that the solution might lie in a carefully planned large-scale dispersal of industry and population to the Dominions and Colonies.[54]

Indeed historians have failed to take the Australian Minister for Works and Housing, Nelson Lemmon, who formally moved the Snowy Bill in 1949, at his word. Lemmon wanted a Manhattan Project. The Government wanted, he told Parliament, to control the electricity resources of the Snowy for defence reasons and went on to contrast it with the TVA. While the Snowy had an installed power of 1 720 000 kilowatts compared to the TVA's 2 056 000kw, the Australian scheme would eventually surpass it by harnessing the more extensive water resources. The immediate need, however, was for the allocation of Snowy-based power of at least 400 000 kilowatts to meet obligations of 'Empire defence'.[55] The TVA, said Lemmon, derived its jurisdiction from the defence power of the US Constitution. The TVA had

> played its part in the winning of the war by allowing a big bloc of power to be taken inland away from the great cities for the development of atomic weapons ... Now ... the Australian Government desires to proceed with the great Snowy Mountains scheme, in an endeavour to ensure that Australia does not lag in the race to develop atomic power.[56]

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53. 'Civil defence: electricity: underground hydroelectric power stations, 1947-50',HTC(47)14, 7 October 1947, POWE 14, PRO.
54. 'Civil defence policy', DO(47)24th meeting, 14 November 1947, CAB 131/5, PRO.
55. Australia, *CPD*, 202, (1949),247.
56. Senator Murray from Tasmania drew this argument out in debate later when he argued that 'dispersal amongst inaccessible mountains will offset, to a considerable degree, the efficacy of the rocket propelled missile'. *CPD*.202,(1949),1769.

The Australians, as we have seen, were also to have a major role in the Empire defence of the Middle East. From bases there bombers could strike into the heart of the Soviet Union in the event of war. The problem was that the Americans had no role in the defence of the Middle East and yet moved to exclude Britain from the ANZUS Treaty in 1951. To be sure Australia had always wanted a security treaty with the US but the ANZUS agreement splintered the Commonwealth at the time when Britain was attempting to put defence planning on a much higher level. London's concern was to get a Middle East commitment and not divert their effort into the Pacific, especially since the Australians hosted the Joint Project.

There is a curious introduction in the letter that the British Prime Minister was to send to Menzies about the ANZUS Pact and the exclusion of Britain:

> I got back from my visit from South Africa last weekend, after a most interesting if exhausting tour ... we completely accept your thesis that it is essential to you for your backdoor to be bolted. A guarantee by the US would make a significant contribution to the strengthening of joint plans for global strategy and for the defence of the Middle East, which I know from our recent talks in London is very much on your mind. A treaty of this kind is bound to have an effect on strategy, on international affairs and on Commonwealth relations. [I] also fear that ANZUS might set back a NATO-type organisation ... There was also a danger that the United Kingdom might be seen as disinterested in the Pacific.[57]

The reference to South Africa was significant, if entirely ignored by historians of ANZUS. That year the investigations that had been initiated in 1944 into the possibility of hydroelectricity and irrigation in Central Africa, at the same time as the Murray Valley investigations in Australia, were resumed. The Kafue and Karibah Scheme envisioned the irrigation of some 400 000 acres while the provision of hydroelectricity for Central Africa and the copper belt would be possible by 1953. The project was 'integral' to the Federation of the Central African Federation.[58] The establishment of the support areas was a far greater carrot than the US offer. In Menzies assessment ANZUS was built on a 'foundation of jelly'.

## 4. Playing the Empire card

The overwhelming emphasis in historical writing has been on London's attempts to engage US power in Europe after the onset of the Cold War in 1948. From this point the US moved to provide economic assistance through the European Recovery Program (following the announcement of the Marshall Plan the previous year), deployed bombers to Britain during the Berlin Crisis and assumed formal defence commitments in Europe through the institution of NATO.

On one issue, however, the Americans refused to bend — the Mcmahon Act was kept in place. Indeed Washington accelerated its own atomic stockpile after the first

57. CP(51)76, 9 March 1951, CAB 129/45, PRO.
58. Item 5704, DO35, PRO.

Soviet atomic test in 1949, thereby reaffirming its need to monopolise uranium and scarce scientific manpower. Britain was prepared to moderate its own program in the hope of cooperation, but by 1952, was ready to enter the test phase of its own atomic weapons program. Accordingly, the need for uranium, fissile material, scientific manpower and test sites became irrestistible. In this context the Empire was indispensible.

The director of the British atomic program, Sir John Cockcroft, accordingly did the rounds that year with the object of securing the closest possible relations with the southern Dominions. An immediate priority was an independent supply of uranium as the British vied with the Americans for supplies. The Americans were keen to lock up South African supplies, but the discovery of a major ore body in Nkana in Northern Rhodesia in June 1952 led the British to develop the ore body alone. In return the British were going to extend technical cooperation and build a pilot plant.[59]

In August 1952 Cockcroft announced that South Africa would be producing atomic power in four years. He then visited Australia and New Zealand where he had talks about a nuclear power program in September. In the latter case Cockcroft was instructed to ensure that the Americans did not 'jump in ahead of us' in establishing atomic reactors.[60]

Finally in April 1953 the British Government decided to build up a Commonwealth effort in the atomic field.[61] This was symbolised by the visit of Menzies' to Cape Town in July. Malan greeted the Australian Prime Minister with the statement that

> South Africa and Australia are aptly called the twin sisters of the Southern Seas. They stand closer than most countries since they are linked by a common policy of preserving white civilisation.

Menzies avoided reference to India but stressed that the two were important cornerstones of Commonwealth defence in the region.[62]

In 1953 the British Government was ready to tear up the atomic relationship that had restricted their co-operation with Empire partners since the so-called 'modus-vivendi' of 1948. Eisenhower's 'Atoms for Peace' initiative in December 1953 foreshadowed American competition in reactor sales and Ottawa at the same time approved a joint feasibility study of power reactors between Ontario Hydro and the National Research Council. In other words Canada was ready to produce full power reactors in cooperation with existing hydroelectricity utilities.

In Britain there were also discussions over methods of coordinating the new Atomic Authority with the British Electricity Authority.[63] These plans took account of the Empire. South Africa, India and Australia then accounted for half Britain's exports and London was keen to sell large power reactors to these Commonwealth customers.[64]

The Board of Trade noted that Australia wanted specifically a 'more high powered reactor' since this suited their particular needs.[65] In July 1954 the UK Atomic Energy

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59. Letter, F. How to Cherwell, 25 November 1953, EG1/119, PRO.
60. DO35/2542, PRO.
61. C(54)52, 11 February 1954, CAB 129/66, PRO.
62. Cable 169, UK High Commissioner, South Africa to CRO, 10 July 1953, DO35/5035, PRO.
63. Bothwell, *Nucleus*, p. 198; PRO, EG1/54, 'The UKAEA: Statutory direction concerning the production of electricity'.
64. PRO, EG1/64, Overseas Trade Memorandum 9/56, 10 February 1956.
65. PRO, EG1/64, 'Advisory council on overseas construction', 1 July 1955.

Authority (UKAEA) laid the foundations for an Australian full power-reactor program by agreeing to the building of an experimental reactor at Lucas Heights, to the south of Sydney where it would be close to industry and universities. In short an Australian Harwell. The Lucas Heights reactor would take three to five years to develop, but power reactors could be in operation in ten years. To prepare for that on 20 September 1954, the Australian Minister of Supply, Howard Beale, submitted to Cabinet a plan for research and development. He argued that the Australian program would start with the recruitment of scientific staff for training staff in appropriate atomic establishments in Britain where they would conduct research into fluid fuel systems for reactors. There they would acquire the information for designing and constructing an experimental nuclear reactor in the next three years. Beale also requested

> an investigation of the possible use of Snowy Mountains hydro-electric power to operate a diffusion plant to produce enriched uranium fuel elements ... the possibility of heavy water production in New Zealand and Australia; [and] a reactor programme for Australia.

The Snowy reactor would be built by Australian engineers who could study the production of plutonium at Windscale; chemical separation techniques at Springfields; the diffusion plant at Capenhurst; production techniques at Risely and the site for the fast plutonium breeder reactor at Dounreay.[66]

It seems apparent that the decision to give final approval in 1955 to the Maralinga tests was part of a general package of agreements on atomic power. The 'permanent proving ground' at Maralinga was to be host to at least twenty firings including the possibility of thermonuclear weapons.[67] Thereafter the Australian Government negotiated the Maralinga tests with the proviso that Britain would provide data 'about the effects of atomic weapons for both civil defence and military purposes'.[68] Maralinga, however, was a part of a major program of atomic cooperation. By the time that the major series of tests were to be conducted, in mid-1956, Australia had a considerable investment in atomic energy. Apart from the construction of Lucas Heights there were eight universities engaged in research covering such diverse fields as physics, chemistry, metallurgy, electrical engineering and geophysics.[69] By August 188 Australian personnel were involved in the construction of the trials area and a vast array of services was provided by the Salisbury workshops, meteorological staff, radio operators, the Postal service, the RAAF, security staff, ordnance and supply staff, civil defence personnel and so on. To Menzies the British had to note 'the cumulative effect' of the Australia contribution at Woomera and Maralinga which were undertaken as part of Commonwealth defence.[70]

There were parallel developments in South Africa. In December 1953 Schonland wrote to Plowden that practically all of South Africa's coastal cities were short of coal but that the Union had enough uranium for the next fifty years. He suggested two inland

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66. Submission 117, 20 September 1954, A4906/XM1, AA.
67. Lorna Arnold, *A very special relationship: British atomic weapon trials in Australia* (London, 1987), p. 97.
68. J. Simonds, *A history of British atomic tests in Australia* (Canberra, 1985), p. 280.
69. AA, A1838/1, 720/3, 'Atomic energy-developments in Australia'.
70. Symonds, *History of British atomic tests*, pp. 199 & 313.

atomic reactors and the construction of four along the coast (East London, Port Elizabeth, Cape Town, Luderitzbucht). He noted that South African engineers had been involved in the Kafue Gorge power scheme in Southern Rhodesia and that South Africa had the physicists. Schonland wanted guidance on the extent to which Britain was going to give leadership to the Commonwealth. Clearly worried by the atomic 'carpetbaggers' from Europe and the US he asked to what extent is 'the Commonwealth idea an outmoded one'? This letter was forwarded by Cockcroft to Plowden on 12 January 1954 as the British Cabinet decided to offer the Australians and South Africans technical information on reactor technology in the hope for uranium.[71] Whatever reservations authorities in London had about the attitude of the Nationalists and the race question,[72] they were keen to strengthen cooperation. As one official in the UKAEA noted on 21 April 1954,

> the United Kingdom has taken the necessary steps with the US to free ourselves from the limitations of the modus vivendi imposed on Commonwealth cooperation ... Our next step is to offer the South African Government assistance in the construction of atomic energy for industrial purposes and as a first instalment to invite them to send people here for training.[73]

On 2 June 1954 the Commonwealth Relations Office finally cabled its assent to Pretoria of cooperation as part of a 'wider Commonwealth' program.[74] In return Pretoria was much more forthcoming with uranium. On 15 September the British High Commission sent word that the Union was looking at some 'hush hush' deposits and was anxious that the Americans did not hear about them since they would be lost to the Union and the UK for industrial purposes.[75] In April the next year London offered loans to open new mines in Hartebeestfontein and Buffelsfontein. The UKAEA was particularly anxious to keep the US from developing radioactive minerals in British territories, especially since the US Refining and Smelting Company was then reported to be prospecting in Swaziland. The latter was of concern also since there was a possibility of manufacturing heavy water in Swaziland where there was an abundance of water and the possibility of hydroelectricity.

Finally on 11 July 1956 the South African Government was on the verge of concluding an agreement with Britain on the peaceful use of atomic energy. This would include exchanging information on reactor physics and engineering technology — at precisely the same time as the proposed agreement with Australia.[76] Apart from the prospect of building the reactors a particular concern of the British in mid-1956 was the maintenance of their hold on the great Kariba project in central Africa.[77] British firms were to get 15 million pounds of orders from the Kariba scheme, according to estimates

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71. Letter, Schonland to Cockcroft, 28 December 1953, EG1/126; C(54)52, 11 February 1954, CAB 129/66, PRO.
72. Letter, Snelling (Cape Town) to Protchard, 5 March 1954, EG1/126, PRO.
73. Note by How, 21 April 1954, EG1/126, PRO.
74. Cable 205, CRO to British High Commission, Pretoria, 2 June 1954, EG1/126, PRO.
75. Letter, Snelling (UKHC Pretoria) to Sir Saville Garner (CRO), 15 September 1954, EG1/126, PRO.
76. CM(56)37th conclusions, 17 April 1956, CAB 128/30, PRO.
77. 'Advisory council on overseas construction', 27 June 1956, EG1/115, PRO.

provided to Cabinet on 17 April 1956, and in return London was to make available 28 million in loans. Indeed the whole Central African Federation project was seen as turning on the development of Kariba. To that end on 5 July 1956 the Commonwealth Secretary told Cabinet that the pledges that were given in 1953 concerning Commonwealth membership should be honoured.[78]

## 5. The end of Empire cooperation

Britain's success in developing deterrent weapons in 1956 and 1957, along with the dramatic successes of the Soviet Union in rocketry and thermonuclear weapons, paved the way for a renewal of Anglo-American atomic relations.[79] The restoration of atomic cooperation was effected in a series of steps after the historic Bermuda summit between Eisenhower and MacMillan in March 1957. This conference saw the beginning of a process that was to work its way through every facet of Empire defence cooperation. Britain was accorded its 'special' position on 19 June 1958 when the US Congress approved final amendments of the 1954 Atomic Energy Act that limited exchanges of nuclear weapons data to nations that had made 'substantial progress' in the nuclear weapons field.[80]

The MacMillan Government also moved to end the integration of defence science which had been the heart of the post-war Empire effort. In 1957 the UK gained access to Canadian ores after an agreement with Eldorado mines in March, the month of the Bermuda conference.[81] In July the US and Britain held discussions designed to end the production of fissile material for nuclear weapons.[82]

This had immediate implications for Australia. By early 1957 Canberra had spent twice as much as the estimated 5.5 million pounds on Lucas Heights. The UKAEA became much more restrictive in passing on information. If the Australians were going to stay in the game then it would be without support. Prominent Liberals like W.C. Wentworth and future Prime Minister John Gorton, who attempted to construct Australia's first reactor in 1968, were keen to press on with an Australian deterrent program, as was Phillip Baxter at the Atomic Energy Commission. But the Menzies Cabinet hesitated.[83] In reality the Australians were stuck in Phase 1 of their atomic program — that of research. If progress was to be made in this area then an unprecedented national effort would be necessary. It was clear that there would be no immediate prospects of atomic reactors. An atomic energy symposium convened in June 1958 by the Australian Atomic Energy Commission, and made up of the various Australian stakeholders, the power authorities, universities, industry and Government, was told Baxter that breeder reactors

78. CM(56)47th conclusions, 5 July 1956, CAB 128/30, Part 2, PRO.
79. K.W. Condit, *History of the joint Chiefs of Staff* 6 (Washington, 1992), p. 11; S.J.Ball, 'Military nuclear relations between the United States and Great Britain under the terms of the McMahon Act, 1946-1958', *The Historical Journal* 38, 3 June 1995, pp. 439-454.
80. T. Botti, *The long wait: The forging of the Anglo-American nuclear alliance, 1945-1958* (New York, 1987), p. 232.
81. Bothwell, *Eldorado*, p. 398; 'Briefs for Bermuda Conference', EG 1/117, PRO.
82. Item 31, Part 2, CC(57)46th conclusions, 24 June 1957; C(57)143, 146 and 151, CAB 128, PRO.
83. Cawte, *Atomic Australia*, p. 109.

might be installed 'in the last quarter of this century'.[84] In 1960 the British at last announced the effective end of testing ballistic missiles in Australia and foreshadowed the winding down of the Joint Project. The leader of the Australian atomic program, Leslie Martin, informed the Government that these events indicated 'an important re-orientation in British defence policy'.[85]

There were, of course, parallel developments in South Africa. In February 1960 MacMillan had given his 'Winds of Change' speech in South Africa. At the same time, at a constitutional conference at Lancaster House, the way was opened to transfer power to Kenya and to make a major reversal in policy — the Kenya base for a Commonwealth strategic Reserve was dead.[86]

In fact MacMillan had started planning to audit the Empire in Africa in 1957. Until then South Africa hosted a strategic nuclear store on behalf of the Commonwealth, but now that path was no longer tenable. Unlike Australia, there was no prospect of a formal alliance with Washington. As a result Pretoria took its own path to a nuclear deterrent. In 1957 the Atomic Energy Board sanctioned the first steps to produce weapons-grade plutonium. A vast site was prepared 23 miles from Pretoria at 'Pelindaba', in a remote area near the well-watered Magaliesberg mountains. The success of Pretoria's miniature TVA became apparent on 24 March 1994 when the President of South Africa, F.W. de Klerk, announced at a special Parliamentary session that his country had secretly produced six atom bombs.[87] South Africa had been alone. It had been surrounded by non-white people who could be attracted to anti-colonial ideas that might threaten the strategically vulnerable nation. It was like Australia in many respects, and like Australia it commenced a journey to arm itself with weapons of ultimate self-defence.

## 6. Conclusion

The paper that lies at the heart of the events after the American atomic embargo is the recently declassified DO(47)44, 'Future Defence Policy'. This had been put forward on 22 May 1947 by the British Chiefs of Staff and enshrined the importance of Empire unity in the context of planning for atomic war by 1956 or 1957, when the new weapons of mass destruction would be available in numbers to the Soviet union.[88] London was indeed determined to engage the US in a renewed partnership and was to gain essentially this at the 1957 Bermuda Conference. After that Polaris and European membership defined the role of modern Britain. Before that point, however, there was a much greater goal — to survive another conflict and in the quest for nuclear deterrent weapons the Empire had a potentially crucial role to play.

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84. *Australian atomic energy symposium*, 1958 (Sydney, 1958).
85. Report by Technical committee on the use of blue streak, 2 September 1960, 61/20, A1209/79, AA.
86. Phillip Darby, *British defence policy east of Suez, 1947-1968* (Oxford, 1973), p. 207.
87. Peter Hounam & Steve McQuillan, *The mini-nuke conspiracy: Mandela's nuclear nightmare* (London, 1995), p. 43.
88. CAB 21/1800, PRO.