'Truth Is the Daughter of Time, Not of Authority':[1] How Oral Histories Revise the Official Narrative of British Atomic and Thermonuclear Testing in Australia

SUE RABBITT ROFF

Sue Rabbitt Roff studied and taught at Melbourne and Monash Universities in the 1970s then worked in human rights in New York including as Press Officer to the FRETILIN delegation to the United Nations. She has studied the long-term health effects of participation in British atomic and nuclear tests. Her publications are collated at www.rabbittreview.com. She is currently a postgraduate tutor at Dundee University Medical School.

AUKUS, the tripartite defence agreement between Australia, the United States and the United Kingdom, was announced on 15 September 2021. It is an extension of the nuclear alliance that was forged between Australia and Britain as the latter sought to resuscitate the Anglo–American wartime alliance that led to the development of the atomic bombs detonated over Hiroshima and Nagasaki in 1945.

Fortunately, there are still accessible oral history primary sources that enable us to review and revise the official histories of these events. Although oral histories are often ephemeral, digital technology allows us to access important observations from what might be termed the 'subaltern' contingent who made up the mass of the 16,000 Australian and 22,000 British 'participants' in the 12 detonations that led up to the eventual detonation of the British H bomb in the 1957–58 Grapple series off Christmas Island. Contrary to statements by the official British historians of the tests that

1 Francis Bacon, *Novum Organum* (1620).

the Grapple shots 'were not a bad start, going straight from the drawing board to an air-dropped test device', they were designed and field tested in Australia. This article reviews many discrepancies evidenced by oral testimonies and statements when they are compared with official statements.

When Britain withdrew from its commitments east of Suez in the 1960s, Australia's testing grounds at Maralinga and Woomera – together with uranium resources – were embraced in the American forward defence umbrella. But as we approach the 71st anniversary of the first British atomic test in Australia (Operation Hurricane at the Monte Bello Islands on 3 October 1952), it is sobering to realise how under-researched Australia's co-operation in the development of Britain's atomic/fission and then thermonuclear/fusion weapons has been.

This article explores multiple unanswered questions in Australian atomic and nuclear historiography. They include:

- Why was Australian physicist Sir Mark Oliphant afraid he would be cursed in 1992?
- Did Lord Penney lie to the Royal Commission about the Black Mist?
- Was the 1985 Australian Royal Commission into British nuclear tests fair to Sir Ernest Titterton in saying he was planted on prime minister Menzies?
- Did Australia give sufficient 'informed consent' to the development of the British Hydrogen (H) bomb in Australia to make it a nuclear power?
- Were thermonuclear materials tested for the British H bomb in Australia?
- Did the Menzies government's Safety Advisor and British government officials lie to the 1985 Royal Commission about health hazards to servicemen required to participate?
- What was the significance of the Kite detonation 40 days before the opening of the 1956 Olympic Games downwind in Melbourne?

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I conducted my first oral history interview when I was in fifth grade at Edithvale Primary School, 40 or so kilometres from Melbourne on the shores of Port Phillip Bay. The headmaster taught some of our classes and, for a class assignment, he required us to interview someone who had served in World War One. My dad – who sold builders' supplies in the 10-shop main street – found a willing interviewee for me.

I attended school when all students were given milk for morning recess. I remember getting annoyed on the days we were told to pour our milk down the gully trap. When I went home for lunch the ABC 'Country Hour' was usually on the radio. On those no-milk days, farmers would be warned that radioactive clouds were drifting eastward from the atomic test sites in Monte Bello and, later, Emu Field, and finally Maralinga. My dad – still in the US Navy Reserve – also came home for lunch. Although normally the mildest of men, he would swear (he had mastered the local vernacular) 'Bloody drongos! Why do they let the bastards nuke them in their own backyard?'

This question has followed me for decades – from my time as an accredited non-governmental organisation representative to the United Nations in New York through the 1980s where I also worked with Nuclear Free and Independent Pacific Movement organisations who supported Micronesians en route from the islands contaminated by US nuclear testing to the Brookhaven National Laboratory on Long Island for continuing medical monitoring.

WHY WAS SIR MARK OLIPHANT AFRAID HE WOULD BE CURSED IN 1992?

On joining a Scottish medical school in 1991, I began to study the long-term health effects on the men (no Anglo-European women were permitted to participate in the tests) who had served at British atomic and hydrogen bomb tests in Australia and then Christmas Island. I started by interviewing Australian physicist Sir Mark Oliphant in Canberra in 1993 when he was a deaf but sprightly 92-year-old. I was accompanied to the interview in Sir Mark's bungalow in the suburbs of Canberra by my friend, the late Dave Aronson, a highly experienced Melbourne labour lawyer.

Afterwards, I asked Dave what he made of Oliphant. 'He was highly rehearsed and hiding something. He kept control of the conversation every minute of the way and was just stepping from one porky to another', Dave said instantly. I suggested it might have been his age and his deafness that made him, whilst very charming, also very domineering.

Figure 1 Oliphant and Aronson. Photograph by Sue Rabbitt Roff (1993) and Brendon Massei (2023)

At the time, I wasn't aware of the long interview Oliphant had conducted the previous year, in which the then 91-year-old discussed with clear pride his role in making the first atomic bombs in the USA that were to end World War Two, pensively adding:

> I wouldn't like somebody to dig up some dirt – and there might be some dirt in my past – that I'm unconscious of. Such as being concerned with the development of the nuclear weapon and I might be cursed for it. I hate that idea, I don't want to be cursed by anybody.[2]

2 Marcus Oliphant, interviewed by Robin Hughes on 20 January 1992, Australian Biography: Sir Marcus Oliphant, National Film and Sound Archive of Australia, NFSA ID 250839, https://www.nfsa.gov.au/collection/curated/australian-biography-sir-marcus-oliphant; Sue Rabbitt Roff, 'Making the Jitterbug Work – Marcus Oliphant and the Manhattan Project' (30 May 2019). Available at https://ahf.nuclearmuseum.org/ahf/history/making-jitterbug-work-marcus-oliphant-and-manhattan-project/. Accessed 21 August 2023.

His choice of words – 'such as being concerned with the development of the nuclear bomb' – is important; his pivotal role in the Manhattan Project (developing the atom bombs detonated over Hiroshima and Nagasaki) was well known. As such, he is likely referring to the post-war development of the British hydrogen, thermonuclear bomb – for which the component parts were tested in Australia in the 1950s.

The documentary records provide evidence that Oliphant was one of the strongest advocates for both a British nuclear arsenal and an independent Australian nuclear deterrent in the first decade after World War Two.[3] He energetically opposed American attempts to retain a monopoly of nuclear weapons rather than internationalising their control, even if that meant proliferation. He was compromised by his association with the British spy Klaus Fuchs.[4] As reported by MI5 interrogator James Skardon after his third interview with Fuchs on 18 January 1951:

> Fuchs was completely composed, and I questioned him about his present position. He said he had been told he must go [from Harwell/AERE], but that there was nothing very urgent about it and he had not so far made any positive enquiry to find any job. He thought the task would not be too hard, and mentioned that Sir John Cockcroft had offered him the choice of two posts, one at Adelaide and the other with Professor Oliphant, also in Australia. He thought that he would not like to work with Oliphant, although he hardly knew him.[5]

The fact that a suspected Australian atomic spy who had worked with Oliphant in the Manhattan Project was also under investigation in London added to American

3 I have outlined Oliphant's post-war views and interventions in Sue Rabbitt Roff, *Making the British H Bomb in Australia: from the Monte Bellos to the 1956 Olympics,* Vol. 1, Part 1 (Cellardyke, Scotland: Sue Rabbitt Roff, 2021), www.rabbittreview.com. See also Sue Rabbitt Roff, 'Was Sir Mark Oliphant Australia's – and Britain's – J. Robert Oppenheimer?', *Meanjin,* 22 January 2019, https://meanjin.com.au/uncategorised/was-sir-mark-oliphant-australias-and-britains-j-robert-oppenheimer/.

4 Sue Rabbitt Roff, 'Mark Oliphant's no-show at the British atomic and nuclear tests in Australia – the Fuchs factor' (10 June 2020). Available at https://johnmenadue.com/british-atomic-and-nuclear-tests-by-sue-rabbitt-roff/. Accessed 21 August 2023. See also Roff, *Making the British H Bomb in Australia.*

5 Klaus Fuchs, interviewed by James Skardon on 18 January 1951, The National Archives of the UK, FILE KV 2/1263, 44.

distrust of Australia's senior nuclear scientist.[6] Oliphant was blackballed from participating in the British tests, which were largely intended to persuade the Americans to re-enter nuclear collaboration with the UK.

Oliphant never spoke out against the fallout implications of the British tests in Australia. When I interviewed him in 1993, he told me, 'Menzies was glad to comply [with the testing]. I think at the time it was the right thing to do, it was impossible to leave the only nuclear weapons in the world in the hands of the USA and USSR. It was an unstable situation that could not be allowed to go on'. 'But were they safe?' I asked. He responded, 'The Brits thought they could ensure any fallout or contamination was not too big. They were very pig headed about it. The people in control were very haphazard about the estimates'. I then asked why didn't he, Australia's premier atomic scientist, speak out about the hazards? He replied, 'People seemed to have great faith in it. People whom I respected so I accepted it'.[7]

Still the question remained: why now, decades later, he didn't speak out about the residual radioactive contamination at Monte Bello, Maralinga and Emu Field, even when he was governor of South Australia. He responded:

> You can really decontaminate Maralinga by leaving it alone. Plutonium alpha particles contamination I think is grossly overplayed. The Aborigines are using it to the full. At the same time it was very naughty of the British to leave it and to think of spreading it that way in the first place was very nasty. The British people were very reticent about revealing contamination especially regarding food contamination. They hugged that to their chests very closely.[8]

6 James Griffiths, 'Peace activist or atomic spy? The curious case of a Cold War nuclear scientist' (6 April 2019). Available at https://edition.cnn.com/2019/04/05/uk/uk-atomic-spy-australia-intl-gbr/index.html. Accessed 21 August 2023. See also Roff, *Making the British H Bomb in Australia.*

7 Sir Mark Oliphant, interviewed by Sue Roff and Dave Aronson, December 1993, transcribed notes from interview held by author.

8 Sir Mark Oliphant, December 1993.

Oliphant was the foundation director and professor of physics at the Australian National University in Canberra. He had been the *éminence grise* behind prime minister Chifley's attempt to build the resources for a nuclear future for Australia. Oliphant was sidelined from the implementation of the military aspects of the Anglo–Australian atomic and then nuclear testing project throughout the 1950s. But he saw and heard a great deal about policymaking during the second prime ministership of Robert Menzies that covered the testing years into the 1960s. Oliphant concluded that Menzies was no dupe – as he has usually been presented in the histories of the Australian tests – but was 'glad to comply'. I was able to verify this oral statement through the documentary evidence held in the Australian and UK National Archives and other depositories. For instance, Menzies begged prime minister Macmillan for tactical nuclear weapons in the early 1960s.[9]

On the fiftieth anniversary of the detonation of atomic bombs over Hiroshima and Nagasaki in August 1995, I published *Hotspots: The Legacy of Hiroshima and Nagasaki*.[10] This was a study of the integrity of the research carried out in the two Japanese cities by the US Atomic Bomb Casualty Commission in the aftermath. It was based on the research papers in the medical literature and the extensive, almost verbatim transcripts of the discussions at the Commission's meetings that are available in several depositories in the United States.

Australia had been tasked with controlling the Hiroshima region. *Hotspots* helped Australian members of the British Commonwealth Occupation Forces to gain pensions for service-related illnesses that had possibly been contracted during their service in Japan in the late 1940s. This caught the attention of the late Sheila Gray, Secretary of the British Nuclear Tests Veterans Association, who had an extensive file on self-reported illnesses that many veterans felt

9 Sue Rabbitt Roff, 'How Menzies Begged Macmillan For The Bomb', *Meanjin,* 2 December 2019, https://meanjin.com.au/blog/how-menzies-begged-macmillan-for-the-bomb/.

10 Sue Rabbitt Roff, *Hotspots: The Legacy of Hiroshima and Nagasaki* (London and New York: Cassell, 1995).

were possibly radiogenic from their time at the Australian and then Christmas Island tests. Sheila organised funding (from the renowned novelist Dame Catherine Cookson who suffered from telangiectasia) and I was able to interview more than a hundred British veterans over the next two years. From these and the material submitted by the men and their families, often their widows, we were able to develop successful appeals against the UK Ministry of Defence's denial of service pensions for possibly radiogenic injury, especially cancers.[11] We had to demonstrate that the appellant had participated in a test and that he suffered from an illness that was known to be possibly radiogenic. For this reason, the oral and documentary histories I took from the men, their families and their widows were so important to the appeals. But we had to rely on Ministry of Defence evidence about recorded exposure to radiation. This evidence was allegedly logged in what came to be known as 'The Blue Book'.[12]

More than 20 years later, in 2019 during my last visit to the UK National Archives in the weeks before the COVID lockdowns started, I was shocked to find a fax message dated 25 June 1985 from the British Defence Research and Supply Staff in Canberra to the Atomic Weapons Research Establishment in the UK. The message enquired about 'the final volume of the sanitised version of the "Blue Book". We have so far received the full sanitised version except for that part dealing with Australian participants'.

The 'sanitised' documentary evidence makes the oral and written statements of participants to the Royal Commission (amounting to at least 7,000 pages, easily downloadable from the Australian National Archives) all the more critical.

11 Sue Rabbitt Roff, '"Knocked over by a Pile of Bombs. Hasn't Felt Well Since": Nuclear Test Veterans and the UK Ministry of Defence Pensions System', in Suzannah Linton (ed.), *Festschrift for Roger Clark* (Leiden: Brill/Nijhoff, 2015).

12 UK Health Security Agency, 'Nuclear Weapons Test Participants: Epidemiological Study' (1 July 2013). Available at https://www.gov.uk/government/publications/nuclear-weapons-test-participants-study. Accessed 21 August 2023.

Since 1983, the Blue Book records have been the basis of studies by the UK's National Radiological Protection Board (NRPB) which monitors the long-term health status of nuclear test participants.[13] Veterans' applications for pensions relating to the health effects from their participation in the nuclear tests reference data from the Blue Book. If those records have been 'sanitised', it is possible that many pensions have been unfairly denied. Further evidence is to be found in the Royal Commission transcripts by future researchers. To date, we have established that the NRPB's epidemiological studies 'under ascertained' multiple myeloma, a marker condition for possible radiation exposure, in at least 30 per cent of test veterans.[14] This all raises the issue of whether other lies and half-truths were submitted as evidence – oral and otherwise – to the 1984–85 Australian Royal Commission into British Nuclear Tests in Australia.

DID LORD PENNEY LIE TO THE ROYAL COMMISSION ABOUT THE BLACK MIST?

In 1984 Yankunytjatjara man Yami Lester travelled to London as head of an Aboriginal delegation to lobby the British government to take responsibility for the consequences of its nuclear tests. He met with high-ranking British government officials and received assurances that the British would fully cooperate with the judicial enquiry set up by the Australian government. Forty years after the first Totem test at Emu Field in South Australia on 15 October 1953, the Aboriginal community gained respect among settler scientists and lawyers for the oral histories they had preserved of what had come to be known as the 'Black Mist' that came rolling north from Emu Field.15

13 UK Health Security Agency, 'Nuclear Weapons Test Participants: Epidemiological Study' (1 July 2013). Available at https://www.gov.uk/government/publications/nuclear-weapons-test-participants-study. Accessed 21 August 2023.

14 Sue Rabbitt Roff, 'Under-ascertainment of multiple myeloma among participants in UK atmospheric atomic and nuclear weapons tests', *BMJ Occupational & Environmental Medicine* 60, no. 12 (December 2003): 18.

15 Black Mist Burnt Country, 'Meeting Yami Lester' (2015). Available at https://blackmistburntcountry.com.au/index.php/2014/09/29/meeting-yami-lester. Accessed 23 August 2023.

The Royal Commission into British Nuclear Tests in Australia published its three-volume report in November 1985.[16] It is based on oral testimony transcribed from participants including the Aboriginal community, military servicemen, scientists, politicians and settler inhabitants. At least 7,000 indexed pages of the transcripts of these submissions can be read and downloaded from the National Archives of Australia.[17] They are remarkably unstudied by researchers.

Seventy years after the tests, many of the documents relating to the British weapons tests in Australia are marked in the Australian National Archives catalogue as 'not yet examined', and haven't been opened to the public. In recent years some of the material held in the UK has been removed from public access.[18] Even so, we can detect important discrepancies between the oral testimonies of participants and the documentary evidence that has accumulated in the Australian and UK National Archives and other depositories.

The Australian government commissioned an official *History of British Atomic Tests in Australia* that was submitted to the Royal Commission in 1985.[19] In a section headed 'Strange Phenomena after Totem 1', its author J.L. Symonds wrote:

> Of recent years, there have been claims of strange phenomena after the explosion of Totem 1 such as 'a rolling black smoke or mist' and 'big coiling cloud-like thing like a dust storm'. At the time, no such reports appeared in the newspapers nor were they announced by radio stations.

However, prior to the staff meeting at Emu Field on the evening of 25 October 1953 (in preparation for the second Totem detonation), Sir William Penney (Scientific Director of the Australian Trials) was informed that the Totem 1 cloud had been seen from Oodnadatta (directly due east of Wallatina). At the meeting, Sir William

16 Justice J.R. McClelland, *The Report of the Royal Commission into British Nuclear Tests in Australia* (Canberra: Australian Government Publishing Service, 1985).

17 'Transcript of Proceedings, Royal Commission into British Nuclear Tests in Australia', National Archives of Australia, A6448.

18 Chris Hill, 'Nuclear History and the Archive', 13 September 2021, YouTube video, 5:40:27. Available at https://www.youtube.com/watch?v=WA1PbZYc5dk. Accessed 21 August 2023.

19 J.L. Symonds, *A History of British Atomic Tests in Australia* (Canberra: AGPS, 1985).

raised the question of mass reaction to the sight of the cloud by the civilian population and informed those present that the cloud had been seen at Oodnadatta. He is reported as suggesting that it had probably been seen from an aircraft. The report of the meeting recorded that

> It was agreed that should there be any reactions arising from reports of the cloud having been seen, the Meteorological Service should announce that normal clouds were within the quoted region and the observed cloud was probably a rain cloud.[20]

It is therefore clear that Penney misspoke – or lied – to the Royal Commission in his oral testimony in 1985 when he said 'I did not hear at the time, nor did I hear in the next few months. The first that I ever heard of it was perhaps two years ago when I read it in the British newspapers'.[21]

WAS THE ROYAL COMMISSION FAIR TO SIR ERNEST TITTERTON IN SAYING HE WAS PLANTED ON SIR ROBERT MENZIES?

Ernest Titterton had been a doctoral student supervised by Professor Mark Oliphant at Birmingham University and was sent to Los Alamos in the first group of British nuclear scientists to join the Manhattan Project in 1943. On 16 July 1945, Titterton detonated the world's first atomic bomb, Trinity, at Alamogordo in New Mexico.[22] When Oliphant returned to Australia in 1950 as the founding director of the Research School of Physical Science and Engineering at the newly established Australian National University (ANU), he recruited Titterton to become the first professor of nuclear physics at ANU. This was the 30-year-old Titterton's first academic post. Prime minister Menzies' decision to invite the newly appointed foundation professor of physics to serve as an Australian scientific observer at the tests and subsequently as chair of the Atomic Weapons Tests Safety Committee came

20 Symonds, *A History of British Atomic Tests in Australia*, 177.

21 William Penney, 'Transcript of Proceedings, Royal Commission into British Nuclear Tests in Australia', National Archives of Australia, A6448, 4348. (Hereafter: RC transcript.)

22 Sue Rabbitt Roff, 'How an Australian 'safety adviser' detonated the world's first atomic bomb' (16 July 2020). Available at https://johnmenadue.com/sue-rabbitt-roff-how-the-australian-safety-adviser-at-the-british-atomic-tests-in-australia-detonated-the-worlds-first-atomic-bomb/. Accessed 21 August 2023.

after several discussions with UK officials in London and Australia and in the full knowledge that Titterton had worked with Penney in the development of the atomic bombs and would continue to do so at the Australian tests.

In late 1949, Titterton was negotiating for the ANU appointment that was offered in early January 1950 and accepted in late January 1950 (in the midst of the Fuchs revelations). Oliphant returned to Australia in August 1950. Penney then asked Titterton to serve as technical director of the first trials which he declined. While Titterton was still in the UK in the first half of 1951, there were discussions with Menzies about his being seconded as an active scientific participant in the first UK atom bomb test which was increasingly likely to be held at the Monte Bellos. (A survey team had been sent to the Monte Bellos in September 1950, but neither the Australian nor the British prime minister had publicly confirmed this). In February 1951 Titterton indicated his willingness to 'do any work required in Australia'. Titterton arrived in Canberra in April/June 1951. Churchill confirmed the Australian test plan in December 1951 although it was not announced in the House of Commons until February 1952. The date for Operation Hurricane was set for October 1952. In March 1952, nine months after his arrival in Canberra according to Titterton's oral account to the 1985 Royal Commission, discussions were initiated by the Australian prime minister's office in Canberra which led to Titterton's travel to the Monte Bellos in October 1952.

The Report of the Royal Commission into British Nuclear Tests in Australia vilified Titterton as a 'plant' on Menzies and his government. This was despite the material in Lorna Arnold's official history (submitted to the Royal Commission in 1985) that repeatedly affirmed Titterton's own view of his role.[23] He was serving what he called 'a curious sort of unanimity' between British and Australian interests in the development of a British atomic capability in its dominion, Australia.

The Australian official historian of the tests – Dr J.L. Symonds, whose *A History of Atomic Tests in Australia* was also submitted to the Royal Commission in 1985

23 Lorna Arnold, *A Very Special Relationship British Atomic Weapon Trials in Australia* (London: Her Majesty's Stationery Office, 1987).

– didn't question the nature of Titterton's proposed involvement with the British scientific team at the Monte Bellos.[24] Symonds wrote:

> The outcome of the observations made by Lord Cherwell was that, in early April 1952, the UK Government sent a message through the UK High Commission that they were pleased to ask whether Mr Menzies could arrange to make Dr Titterton available *to help in telemetry work for the test*.[25]

According to Symonds:

> Mr Menzies approved the request in principle and asked the Vice-Chancellor of the Australian National University, Sir Douglas Copland, whether the attachment could be organised. The Vice-Chancellor readily agreed. When Titterton approached the Prime Minister's Department for information as to his responsibilities and to whom he should report, the only assistance they could give was to suggest that he contact the UK. Penney wrote subsequently to Titterton in July asking him to contact the Head of the UKSLS [United Kingdom Service Liaison Staff] in Melbourne on the subject of his involvement.[26]

The significance of this incompatibility between the Royal Commission and both the Australian and British official histories of the mid-1980s is that Menzies and his government are depicted as dupes rather than consenting partners in the project. The depiction of the Menzies government radically skews the narrative of what happened over the next ten years of Menzies' prime ministership as Britain tested its atomic bomb and then moved to the development and proof of principle testing of the H bomb series, detonated off Malden and Christmas Islands in 1957 and 1958.

24 Symonds, *A History of British Atomic Tests in Australia.*

25 Symonds, *A History of British Atomic Tests in Australia*, 55. Emphasis added.

26 Symonds, *A History of British Atomic Tests in Australia*, 55.

DID AUSTRALIA GIVE SUFFICIENT 'INFORMED CONSENT' REGARDING THE DEVELOPMENT OF THE BRITISH H BOMB IN AUSTRALIA?

This depiction of the Menzie's government raises the question of whether or not Australia actually became a nuclear power through its government's agreement to cooperate with the increasingly thermonuclear component tests in Australia.[27] Titterton told the Royal Commission that he had several meetings with prime minister Menzies before Hurricane (the first British atomic test in Australia, at the Monte Bello Islands on 3 October 1952) from March to October 1952.[28] According to Titterton, 'Anytime the Prime Minister wanted to know an answer to a question, usually Alan [sic] Brown came on the phone and said "Pop over" literally: and I frequently did, on my bike'. Allen Brown was secretary of the Prime Minister's Department between August 1949 and December 1958. His name appears frequently in the official correspondence between London and Canberra about the tests. According to Titterton, Menzies' brief to him was:

> In view of your experience, which is unique in Australia, of three nuclear weapons tests around the world, I would be glad if you would be prepared to go to the Monte Bellos to lend whatever help you can to Dr Penney's team – as he was then – and at the same time to – well, essentially stick your oar in to make as certain as it is humanly possible to be certain that there will be no adverse effects on the Australian people, flora and fauna and in particular the aborigines [sic]. Now, he did not know how you did it, he was just saying, you have some experience of three occasions, now you go and use your experience in our interests.[29]

'It was', Titterton explained to the Royal Commission, 'a team. It was not just Australians versus British or British versus Australians; it was a team to do a job as well as we knew how to do the job'.[30]

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27 See Sue Rabbitt Roff, *Making the British H Bomb in Australia: from the Monte Bellos to the 1956 Olympics,* Vol. 2, Part 3 (Cellardyke, Scotland: Sue Rabbitt Roff, 2022), www.rabbittreview.com.

28 RC transcript, 7637.

29 RC transcript, 7637.

30 RC transcript, 7637.

Asked what he understood his role to be at the tests, Titterton replied, 'if you can get somebody who is going to do two jobs, namely be helpful on the telemetry, which is a very important aspect of a weapons test, and at the same time do the job which is required of him by the Australian government, it is obviously in the benefit of both – to the benefit of both parties. From the Australian point of view, one gets know-how and experience'.[31]

At least at the outset of the Hurricane test in 1952, Titterton's explanation deserves respect. He did not dissimulate his understanding of his role in the run-up to the Hurricane trial in 1952 nor in the 1980s before the Royal Commission on the nature of his role at the first Monte Bellos test. The Royal Commission staff surely had access to newspaper reports from the months before and after Hurricane in October 1952. These make it very clear that Titterton was both reporting to Menzies and had a scientific role at the Monte Bello test. The *West Australian* reported on 23 September 1952 – 10 days before the test – under the banner headline 'Oliphant is unlikely to go to test' that while Titterton was already at the test site, Oliphant was still in Canberra. The newspaper claimed Titterton had been given indefinite leave to attend, expected to total about two months:

> He has been asked by the British Government to attend the tests, not merely as an observer on behalf of the university, but *as a key member of the upper team of scientists who will correlate and interpret the results.* Professor Titterton has specialised in aspects of nuclear physics which will have an important application at the Monte Bello tests. He is expected to spend some time *analysing the results and in conference with other leading members of the team* before he returns to Canberra.[32]

Titterton also wrote articles in the weeks before the Monte Bello test in October 1952 that were widely published around Australia. The biographical note attached to them states that he was to be 'Australia's only scientific observer' at Monte Bello.

31 RC transcript, 7643a.

32 'Oliphant is unlikely to go to test', *West Australian*, 23 September 1952, 4. Emphasis added.

The *Western Mail* reported on 16 October 1952 that only Titterton 'and seven others will be allowed to see the final report on the blast. Two of them will be Winston Churchill and Mr Menzies. Information even to the heads of the three services will be restricted to "what they need to know so that they can apply the new results in their own fields"'.[33]

Several times in her 1987 official history, Arnold refers specifically to Penney's desire for Professor Ernest Titterton's participation in the scientific team as a telemetry expert. A major inconsistency between both Symonds' and Arnold's official histories and the Report of the Royal Commission centres on the recruitment and role of Ernest Titterton. Arnold had the opportunity to read the Royal Commission transcripts – she cited them on occasion. Nevertheless, she repeatedly stated that Ernest Titterton was recruited *because* of his specialist scientific expertise that Penney valued so highly. According to Arnold's official history as submitted to the Royal Commission into British Nuclear Tests in Australia before the Commission wrote its report, Penney 'was anxious also to borrow Titterton from ANU, not as an observer but as a telemetry expert'.[34] Arnold elaborated:

> Lord Cherwell, the British Minister responsible for atomic energy policy, was asked [about inviting Australian scientists to the tests]; his prime concern was that the presence of Australian scientists might give the Americans an unfavourable impression of British security arrangements. However if the problem was frankly explained to Menzies, and he felt that some Australian scientists should attend, Cherwell would be prepared to agree to Titterton.[35]

She continues over the page:

> In view of Titterton's unique expertise, it was natural that Penney, who had so much wanted him on his staff, should be anxious at least to borrow him

33 *Brisbane Telegraph,* 22 September 1952, 5.

34 Arnold, *A Very Special Relationship*, 29.

35 Arnold, *A Very Special Relationship*, 29.

> as a telemetry expert at Hurricane; it was in that capacity, *rather than as an observer for the Australian government,* that Titterton took part.[36]

Arnold notes that Titterton attended all the major trials – after 1955 as a member of the Atomic Weapons Tests Safety Committee (AWTSC) and its chairman from 1956. Even in her capacity as British official historian, Arnold comments 'But as a very new Australian with close United Kingdom ties and a Los Alamos background, his position was bound to be seen by many as an ambiguous one'.[37] Nevertheless, from then on in her official history, Arnold herself refers to Titterton as an Australian scientist and representative at the trials.

Six pages later Arnold writes, 'In April 1952, at Penney's personal request, as we saw, the Australian government was asked if E.W. Titterton, recently appointed Professor of Physics at the ANU, might take part as telemetry expert'.[38] In her second edition of the official history published in 2006, titled *Britain, Australia and the Bomb,* Arnold did not alter her account of how Penney recruited Titterton to the British scientific team at the Australian tests.

The present author has reported elsewhere how Menzies was clearly rattled by the proposal being discussed at the Geneva Nuclear Tests Conference for 'control posts' in nuclear testing countries such as Australia had been conducting for a decade or more.[39] Even in 1985 the Royal Commission seems to have decided that it was best to downplay the extent of the Menzies government's consent in the progression from atomic fission to thermonuclear fusion in Australia as Britain developed its H bomb. But Menzies' role was obscured by the 'scapegoating' of Professor Sir Ernest Titterton in the Royal Commission's Report.

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36 Arnold, *A Very Special Relationship*, 31. Emphasis added.

37 Arnold, *A Very Special Relationship*, 31.

38 Arnold, *A Very Special Relationship*, 37.

39 Roff, 'How Menzies Begged Macmillan For The Bomb'.

WERE THERMONUCLEAR MATERIALS TESTED FOR THE BRITISH HYDROGEN BOMB IN AUSTRALIA?

The 1953 Totem atomic tests and what came to be known as the 'Kittens' trials began the escalation from atomic bombs to hybrid boosted thermonuclear devices, culminating in the British hydrogen bomb tests off Malden Island in the central Pacific Ocean in 1957 and 1958. This occurred despite repeated public statements that the testing in Australia would not move from fission to the far more powerful fusion devices.

The Australian government permitted more than 100 Kittens trials at Emu Field and Naya 480 kilometres northwest of the Woomera in South Australia from 1953. They were tests of the trigger detonators or 'initiators' being designed for the hydrogen bomb. Essentially the tests were to determine how much fission energy would be necessary to trigger a fusion explosion. In other words, they were working out how an atomic bomb could become 'a mere detonator' for a thermonuclear hydrogen bomb.

It is possible to use the National Library of Australia's Trove collection of digitised newspapers to trace the oral statements to the press of Menzies and Howard Beale, the Minister of Supply who was responsible for Australia's contribution to the British testing program. For instance, a report on 27 November 1954 stated: 'Supply Minister Beale said there was no question of a hydrogen bomb being tested on Australian territory'.[40] This understanding was repeated at frequent intervals through 1955.[41]

The UK was negotiating a 'Memorandum of Arrangements' for a permanent 'Atomic Weapons Proving Ground' at what came to be called Maralinga. This came into force in March 1956 and stated that 'No thermo-nuclear (hydrogen) weapon will be tested on the site'.[42]

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40 '1955 A-Test at Woomera Likely', *The Daily News*, 27 November 1954, 11.

41 Sue Rabbitt Roff, *Making the British H Bomb in Australia: from the Monte Bellos to the 1956 Olympics* Vol. 2, 22–24.

42 Arnold, *A Very Special Relationship,* 280.

This reassurance was repeated in documents in the UK National Archives in File, for example, 'Her Majesty's Government wish to state *categorically* that there has *never been any suggestion that a hydrogen bomb should be tested in Australia*'.[43] I provide further examples in *Making of the British H bomb in Australia*.[44] The UK Secretary of State for Commonwealth Relations, the Earl of Home, toured Australia for a month from mid-September 1955. He was advised in his briefing papers of the tangled web he would need to negotiate in relation to the proposed thermonuclear testing at the Monte Bellos.

Along with these earlier documents, there is one that is undated but filed around August 1955 titled 'Brief for Secretary of State's Tour Autumn 1955 – Top Secret'. Paragraph 6 of the Earl's brief states:

> At an early stage in the negotiations with the Australian Government Mr. Beale, the Australian Minister for Supply, made categoric statements, without first consulting us, to the effect that the Australian Government had no intention of allowing H-bombs or *any related experiments* to take place in Australia. He subsequently modified the last portion to 'hydrogen bomb tests or *any tests of that character*'. Mr. Beale has, however, shown himself to be extremely sensitive over the possibility of any thermo-nuclear weapon testing in Australia.[45]

Paragraph 7 of the brief, headed 'Tests in Monte Bello Islands: Code Name "Mosaic"', states:

> We are anxious to carry out two experimental firings consisting of atomic explosions with the inclusion of light elements as boost. The information obtained from these trials should be a vital link in the development of the thermo-nuclear weapon. We wish to carry out these trials next April, before Maralinga will be ready. We had agreed with the Australian Government that

43 Australian National Archives, A6455, RC 559, Part 3 Item 1905016. Emphasis added.

44 Sue Rabbitt Roff, *Making the British H Bomb in Australia: from the Monte Bellos to the 1956 Olympics* Vol. 2, 24–25.

45 Australian National Archives, A6455, RC 559, Part 3 Item 1905016. Emphasis added.

> we would not test thermo-nuclear weapons in Australia *but* Mr. Menzies has *nevertheless* agreed to the firings taking place in the Monte Bello Islands (off the North-West coast of Western Australia), which have already been used before for atomic tests. As already explained, the Australians are very sensitive on the question of thermo-nuclear explosions, and *although the true character of these tests is understood by the authorities immediately concerned*, *knowledge of the trials is restricted to a very small circle and no public statement has so far been made; when it is made, it will therefore require very careful handling*.[46]

The documents discussed above are available for free downloading from the National Archives of Australia among the bundles of files that were submitted to the Royal Commission into Nuclear Tests in Australia in 1985.

Despite the documents having been submitted to the Australian Royal Commission, the documents referring to Beale being 'incorrect' about the nature of the initiator tests and Home being advised that the 'true nature' of the Mosaic were known to the Australian 'authorities immediately concerned' were not referred to in the Commission's Report. Nor is there any mention of the imminent 1956 Olympic Games in these reports. The lack of mention of the upcoming Olympic Games is significant due to the fact that the Games were to open in Melbourne, downwind of the test sites at the Monte Bellos, Emu Field and Maralinga.

I have indicated several aspects of the test programme that have been misreported in the official document and demonstrated how oral evidence often points out discrepancies that can be corroborated by cross-referencing and triangulation of the contemporaneous data. Nonetheless, there is still a huge trove of 'unexamined' material in the Australian and UK National Archives.

46 Australian National Archives, A6455, RC 559, Part 3 Item 1905016. Emphasis added.

DID PROFESSOR TITTERTON (AUSTRALIAN GOVERNMENT SAFETY ADVISOR) AND BRITISH OFFICIALS LIE TO THE ROYAL COMMISSION?

The chair of the Atomic Weapons Tests Safety Committee for most of the detonations was Professor Ernest Titterton. One of the first questions asked of him when he first appeared before the Royal Commission in May 1985, was whether he 'had done any work which today would be described as health physics work…in relation to radiation and human biology?'[47] Titterton responded that he had, 'because whenever anyone is involved in radioactivity, it has health effects'. When asked if he ever published anything relating to health effects, Titterton replied in the negative, making it clear that he was primarily 'interested in publishing in relation to radioactivity and nuclear physics' and that the health effects were 'incidental'.

Several papers Titterton published in the late 1940s related to the invention of personal radiation dosimeters for atomic workers. A 1959 bibliography lists four articles in 1949 and 1950 alone, before Titterton left the UK to take up the foundation professorship of physics at the Australian National University.[48] For example, in 1949 he reported in the scientific journal *Nature* that, for the personal radiation badges he developed to measure exposure, 'An accuracy to within 5% can be achieved in dose determinations without undue elaboration of measurement and calibration'.[49] In the same year he confirmed in an Atomic Energy Research Establishment (AERE) report that 'one observer working full-time can determine fortnightly slow neutron doses for between 100–150 individuals'.[50] He repeated these findings in the *British Journal of Radiology* in 1950.[51]

47 RC transcript, A6448, 14.

48 R.W. Brisbane and L.B. Silverman, *Photographic Dosimetry: An Annotated Bibliography* (n.p.: United States, 1959).

49 E.W. Titterton, 'Slow Neutron Monitoring with Boron- and Lithium-loaded Nuclear Emulsions,' *Nature* 163 (1949): 990–991, https://www.nature.com/articles/163990b0.

50 E.W. Titterton, 'Slow Neutron Health Monitoring with Nuclear Emulsions', Atomic Energy Research Establishment Report AERE G/R-362, June 1949.

51 E. Titterton and M.E. Hall, 'Neutron Dose Determination by the Photographic Plate Method,' *British Journal of Radiology* 23 (1950): 465–471.

THE SIGNIFICANCE OF THE KITE DETONATION 40 DAYS BEFORE THE OPENING OF THE 1956 OLYMPIC GAMES

The samples of dissimulation or outright falsification by the authorities in their official histories and submissions to the Royal Commission provided above have been historical. However, this dissimulation and falsification continue today, despite current generations being able to check the film evidence online of (what was supposed to have been) the first airdrop detonation of an atomic or thermonuclear bomb in Operation Grapple off Christmas Island in 1957 and 1958.

This was intended as the field testing of the airburst system that would be used in 1957 and 1958 for the fusion H bombs that were too powerful to be detonated on the surface as a ground burst.

A 1958 report published by the Atomic Weapons Tests Safety Committee (whose second chairman was Professor Titterton) states that 'one [weapon] was dropped from a Valiant bomber and fused to fire above the surface of the earth'.[52] Over the page, it states 'On 11 October 1956, Round 3, also a device of low yield, was dropped from an aircraft and detonated above the surface of the desert'.[53] However, the film footage available online clearly shows that Kite detonated on the surface and the fireball behaved as a ground burst.

In the six months preceding the opening of the 1956 Olympic Games in Melbourne, which is located downwind of both the Monte Bellos and Maralinga test sites, Britain detonated six hybrid 'boosted' fission–fusion bombs in preparation for the detonation of the British H bomb off Christmas Island in May 1957. The sixth test, named Kite, was detonated at Maralinga on 11 October 1956 (less than six weeks before the opening of the Games). The official historian of British atomic and nuclear testing in Australia, Lorna Arnold, wrote in 1987 that when the British Chiefs of Staff were talking of trials in 1955 or the (Australian) spring of 1956,

52 W.A.S. Butement, L.J. Dwyer, L.H. Martin, D.J. Stevens and E.W. Titterton, 'Radioactive Fallout in Australia from Operation Buffalo', *The Australian Journal of Science,* no 21 (October 1958): 63.

53 Butement et al., 'Radioactive Fallout', 64.

> *They want [sic] an airburst* to prove the Blue Danube (MK1 bomb); the centre section had been exploded at Totem, and deliveries to the RAF had already begun, but an operational test was obviously desirable as soon as possible, if only to give at least one aircrew the experience of dropping it.[54]

'Blue Danube' was Britain's first freefall nuclear weapon, to be dropped from an aircraft rather than detonated on a tower or from a tethered balloon.[55] It had an operational explosive yield of 40 kilotons. The original plan was to use a standard bomb, fused to detonate at 1,200 feet. However, if the fusing system failed, a surface burst of 40 kilotons was unacceptable so the bomb was modified to give a three-kiloton yield with a burst altitude of 500 feet.

In 1990, during a specialist defence seminar held in London, military historian Humphrey Wynn stated that

> the first production bombs with this [atomic] warhead – Blue Danube – were delivered to RAF Wittering in 1953…The eventual climax of the development effort…occurred on 11 October 1956, when, in the Operation Buffalo trials at Maralinga, South Australia, a live Blue Danube was successfully dropped from a Valiant of No 49 Squadron.[56]

Similarly, six months later, Air Vice-Marshall W.E. Oulton, Task Force Commander of the Christmas Island H bomb tests, told the same seminar that 'the *prototype thermonuclear device itself*…would be contained in the only available bomb case of suitable size in proven ballistics, the Blue Danube case.

Joseph Rotblat explained in a publication for the Stockholm International Peace Research Institute in 1981:

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54 Arnold, *A Very Special Relationship,* 94. Emphasis added.

55 RAF Barnham Nuclear Weapon Storage Site, 'Blue Danube Free Fall Nuclear Bomb' (n.d.). Available at https://rafbarnham-nss.weebly.com/blue-danube.html. Accessed 21 August 2023.

56 Humphrey Wynn, *The Proceedings of the Royal Air Force Historical Society,* no 7 (February 1990): 12. Emphasis added.

> For explosions above ground the altitude of the burst and size of the fire-ball have an important bearing on the magnitude of the early fall-out. If the fire-ball touches the ground, the soil and other materials are vaporized and taken up with the fire-ball. The strong after-winds cause huge quantities of dirt and debris to be sucked up. They mix with the radioactive fragments of the bomb and form particles of various sizes which move upwards as well as spreading out. Later they begin to fall to the ground under the force of gravity, at rates and distances depending on the size of the particles and the velocity of the wind. This deposition of radioactivity constitutes the early, or local, fall-out. On the other hand, if the bomb is exploded at such a height that the fire-ball never touches the ground there is much less or even no local fall-out (but there will be global, or delayed, fall-out).[57]

Nevertheless, despite these conclusive findings by experts in the field, in her official report of 1987, Lorna Arnold stated with regard to Kite –

> It was to be a Service operational test of a Blue Danube bomb, and originally the expected yield had been some 40 kilotons, which would have produced little fallout from firing at an altitude of about 1200ft. But there was a remote possibility that the fuzing (sic) system might fail and that the bomb would hit the ground before exploding. A ground burst of 40 kilotons would be quite unacceptable, and various safety devices were considered that would prevent detonation on impact…a low yield version was used instead, to be dropped from a Valiant bomber and fuzed (sic) to detonate at 500ft. The expected yield was 3 kilotons…It was successfully carried out on 11 October, [1956] 15.30 hours.[58]

Later, Penney reported back to Aldermaston:

57 Stockholm International Peace Research Institute/Joseph Rotblat, *Nuclear Radiation in Warfare* (London, Taylor & Francis, 1981).

58 Arnold, *A Very Special Relationship*, 163–164.

> RAF did a lovely job. Brilliant flash and fireball. Some trees set on fire and many scorched. Terrific dust cloud and stem. Impressive scar on desert, surface torn and rocks scattered in central area. Atmosphere very dry and stable with inversion at 14000 ft where cloud stopped as predicted. Blast and heat indicate 3 to 4 kilotons, nearer 3.[59]

Despite the official UK history describing Kite as '*Airburst:* freefall at 150m with 3 kiloton yield', archival film footage listed in the footnote clearly shows that Kite was a *ground burst.*[60]

In *Valiant Boys: True stories from the operators of the UK's first four-jet bomber*, former test pilot Tony Blackman and former Valiant pilot Anthony Wright report interviews conducted with Flight Lieutenant John Ledger.[61] It is worth noting that the book is endorsed by a foreword from Marshal of the Royal Air Force Sir Michael Beetham, and that Ledger was co-pilot of the Valiant that dropped the first live bomb in the British test series in Australia (at Kite/Buffalo on 11 October 1952). Interestingly, according to the authors' reported interview with him, Ledger had no recollection of any particular debate as to whether a ground site in Australia should be used for atomic explosions. He recalled that the crew thought it strange to be permitted to drop such a powerful weapon over land with the potential risk of fallout being spread over an inhabited area. He stated this was particularly risky

59 Arnold, *A Very Special Relationship*, 163–164.

60 Arnold, *A Very Special Relationship,* 287. Emphasis added. The online footage indicates three views from different cameras are available. The fireball can be seen in the first seconds of the explosion, with the desert horizon clearly in view and no sign of a fireball in the sky. Rewinding very slowly gives a clearer picture of the fireball. See: Australian Screen, 'Operation Buffalo – Colour Record', 1956, National Film and Sound Archive of Australia, 3:06. Available at https://aso.gov.au/titles/sponsored-films/operation-buffalo/clip2/. Accessed 21 August 2023; Atomicforum, 'Buffalo Kite Explosion', 21 November 2006, YouTube video, 0:33. Available at https://www.youtube.com/watch?v=eyR48Hz7HD4. Accessed 21 August 2023; British Movietone, 'Maralinga Nuclear Test – 1957 | Movietone Moments', 6 October 2018, YouTube video, 2:21. Available at https://www.youtube.com/watch?v=R0MgVjCEwd0 (see around 1:43 minutes). Accessed 21 August 2023; British Movietone, 'The Woomera Atomic Test', 21 July 2015, YouTube video, 2:57. Available at https://www.youtube.com/watch?v=SrPQ5O3wWGg (see around 1:41 minutes). Accessed 21 August 2023.

61 Tony Blackman and Anthony Wright, *Valiant Boys: True stories from the operators of the UK's first four-jet bomber* (London: Grub Street, 2014).

when the wind changed direction and caused the fallout to blow over the southern towns.

Captained by Squadron Leader Flavell, the aircraft let go of the weapon at 35,000 feet visually aimed after a rad-controlled run-up. Telemetry confirmed a burst height between 500/600 feet, 100 yards to port and 60 yards short of the target.[62]

However, according to Blackman and Wright, the crew of the Valiant did not see the moment of detonation:

> With regards to the special modification state of the aircraft, WZ366 had been fitted with windscreen blinds (John [Ledger] thinks made of steel) that obliterated all view from the cockpit. There was a small central slot in the blind that allowed the crew to see out for take-off and landing, which was then closed after take-off. This would explain the emphasis on instrument flying during the build-up and training phase in the UK. John thinks that the A bomb was dropped from the visual bomb aimer's position with the navigator then scrambling back to his seat post release. The crew seemed to know about the initial shock wave which he describes as moderate to severe turbulence. However, they were less prepared for the severity of the return wave, which caused them some consternation. John said that the navigator did not get back to his seat in time and was thrown about the rear cockpit due to the blast wave, much to the amusement of the rest of the crew.[63]

The Royal Commission noted in 1986 that

> The explosion went as planned and it was a true airburst, i.e. the fireball did not reach the ground. The top of the cloud reached 15,000 feet.[64]

62 Blackman and Wright, *Valiant Boys,* 36.

63 Blackman and Wright, *Valiant Boys,* 36–37.

64 Parliament of the Commonwealth of Australia, British Nuclear Tests in Australia – Royal Commission (President: Mr Justice J.R. McClelland) – Report, dated 20 November 1985 – Volume 1 (Canberra: Australian Government Publishing Service, 1985), 287.

Seventy years after Kite misfired, authorities are still lying about it. I have indicated several aspects of the test programme that have been misreported in the official documents. I have also demonstrated how oral evidence can point out the discrepancies that are corroborated by cross-referencing and triangulation of the contemporaneous data. Nonetheless, there is still a huge trove of 'unexamined' material in the Australian and UK National Archives.

Several radio and television interviews with scientists responsible for the Australian tests (such as Sir Mark Oliphant and Sir Ernest Titterton) are available online.[65] Digital technology permits a whole new level of research. For instance, we can recover the meteorological data that refutes the claims of spokespeople that no potentially radiation-bearing rain fell on the major cities after the detonations.[66]

A new generation of university researchers is emerging in both Australia and the UK. Nearly four centuries after Sir Francis Bacon said 'Truth is the daughter of Time, not of Authority' we have a chance of extracting the truth of the first phase of the nuclearisation of Australia on the eve of the AUKUS era.

65 'Mark Oliphant', American Institute of Physics, https://www.aip.org/history-programs/niels-bohr-library/oral-histories/4805; 'Sir Ernest Titterton Interviewed by David Ellyard [Sound Recording]', National Library of Australia, https://catalogue.nla.gov.au/Record/493517/.

66 See Roff, *Making the British H Bomb in Australia*, Vol. 2.