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(Sefton, R., 2017)

Grappling with the Bomb

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The telegraphist—Roy Sefton

Like Paul Ah Poy, New Zealand sailor Roy Sefton joined the Navy as a young man to travel the world and seek broader horizons. At age 19, he was posted as a telegraphist and radio operator on the New Zealand frigate HMNZS *Pukaki*:

This was my first ship and, after hearing the tales from all the old salts around the rum, I wanted to have experiences in exotic places like Hong Kong. Instead I ended up at Christmas Island.

As a young man, I never imagined that I would eventually spend 40 years of my life campaigning for the rights of nuclear test veterans, including 22 of those years as Chairman of the New Zealand Nuclear Test Veterans Association.¹

P. On 11 February 1957, with New Zealand Prime Minister Sidney Holland pledging support for Britain, the NZ Cabinet approved participation in Operation Grapple. HMNZS *Pukaki* and HMNZS *Rotoiti*—two frigates of the Royal New Zealand Navy (RNZN)—were to be sent between March and July 1957 to join the naval task force as weather ships.² The Royal New Zealand Air Force (RNZAF) would provide support for the radiation monitoring program and general transport duties.



Roy Sefton, aboard HMNZS *Pukaki*, 1957

Source: Courtesy Roy Sefton.

The presence of New Zealand ships in a British naval task force was regarded as normal procedure. Even with a small fleet, the RNZN had long worked in cooperation with the Royal Navy (RN). During the Second World War, more than 10,000 New Zealanders were trained at the HMNZS *Tamaki* base to serve aboard RN and RNZN vessels in every theatre of the war.³ Six Loch-class frigates had been purchased from England in 1948, for a cost of £1.5 million, as the United Kingdom ran down the size of its wartime fleet.

At Christmas Island, two of these RNZN frigates joined the RN warships of the Grapple flotilla at Port London, a harbour inside the north-west arm of the island's lagoon (and, for later tests, at the opposite end of the island from ground zero). For naval personnel based on shore, the camp was redesignated as HMS *Resolution*.

Over the next two years, *Pukaki* was sent on four separate deployments to participate in all nine hydrogen bomb tests in 1957–58. *Rotoiti* was redeployed to the Far East in late 1957, after participating in the first three tests at Malden Island (May–June 1957) and the Grapple X test (November 1957). Over this period, 551 NZ sailors served on the two vessels.⁴

As a junior member of the *Pukaki*'s crew, Roy Sefton witnessed five nuclear tests:

I did the first three tests and then returned to Auckland thinking it was all over. But no, the ship was sent back up to Christmas Island for Grapple X. We came back to New Zealand, but the same thing happened again and we were sent back for Grapple Y. After that there was a big shift and a lot of crew were taken off because they'd been there for a long time. I was one who was taken off, but there were some who stayed aboard and did all nine detonations.

Sefton recalled that, during the 1950s, conditions aboard the New Zealand naval vessels were pretty rugged by contemporary standards:

Living on those ships, you really lived hard. When you're at sea, you are watch keeping or on shift work all the time. I was a telegraphist radio operator, so I saw very little outside the office. I went up to the radio shack, did my watch, slept, ate down below. In the evenings, you could go on deck for the beer issue, but I was too young at the time to draw a rum and beer ration.

Our mess deck was very crowded and not everybody had a hammock, so some slept on the deck and others slept under the mess table on stretchers or things like that. You must remember we were in the tropics. A lot of guys, including myself, went down and got a stretcher from the stores and slept on the deck, because the heat down in the mess decks was too much. Those ships were built for the convoys to Russia in 1942 and they were not designed for the South Pacific.

For the first deployment, the two frigates left New Zealand on 14 March and travelled to Christmas Island via Fiji, collecting 39 Fiji Royal Naval Volunteer Reserve (FRNVR) sailors in Suva (see Chapter 7). The *Pukaki* sailed on directly to Christmas Island, while *Rotoiti* diverted via the Cook Islands.

On the day of the tests off Malden Island, the *Pukaki* and *Rotoiti* were tasked to monitor prevailing weather conditions and wind speeds, using meteorological balloons released at regular intervals and tracked by radar. In his study of the operation for the New Zealand Defence Force (NZDF), John Crawford has detailed the ships' key contribution:

The main task of the New Zealand frigates was to be the collection of meteorological information, which was essential for the successful and safe conduct of the nuclear tests. The two weather ships would carry out patrols around the test site, during which they would regularly launch hydrogen filled balloons. The flight of these balloons, which were fitted with radar reflectors, was to be tracked by radar, and the information about wind patterns and other data was then to be passed to a meteorological centre on Christmas Island.⁵

For the first two tests, Short Granite and Orange Herald, the NZ frigates took up positions off Malden Island to monitor the airburst as the devices were dropped by Royal Air Force (RAF) Valiant aircraft. For both tests, *Pukaki* was stationed approximately 50 nautical miles from ocean surface 'zero point', where the bomb was targeted. *Rotoiti* was deployed further away, about 150 nautical miles from the area where the bomb was to detonate.

Interviewing Christmas Island veterans decades later, many are vague about dates and details. But they could all recall vivid impressions of the first time they viewed a nuclear explosion. Roy Sefton still has sharp memories of his first test, Short Granite:

The most enduring impression I have of a detonation was the first one. I guess that was probably everyone's major impression. *Pukaki* and *Rotoiti* alternated as 'close-in' ship for each test, so *Pukaki*—the ship that I was on—was close in for Grapple 1.

On the day of the test, us youngsters sat together at the communicators' blast station on the quarter deck. You were pretty much left to your own thoughts. It was a quiet, reflective time and none of us had any real idea of what we were going to see, including the ship's captain and all the officers. We've since learnt that even the scientists didn't know what would happen with Grapple 1, whether it would be a fizzer or a monstrous blast—a detonation of the size that they intended—because it was totally experimental.

We sat there and then the bomber came out. They had direct radio contact with the ship and it was broadcast on the ship so you could hear the pilot. We were all sat down with our backs to the blast and you were required to put your hands over the goggles you were wearing and close your eyes. There was this horrific flash. You could see the bones of your hands. I remember there was silence from all these people on deck, and then all of a sudden, some good old naval language came out!

Following the detonation, the crew were ordered to stand up, turn around and face the blast.

Photographs don't do it justice. Even though it was 80 miles away, it was amazing. It sort of bubbled, there were pinks and all these hot colours. After a period we watched it and the colour went out of the fireball. It took on that very white effect like a mushroom. The ship turned its bow towards the detonation and I thought 'bloody hell, why are we going there?'

In those days, I didn't know what ionising radiation would do to me, but I remember looking around me instinctively, thinking 'is there anything getting at me?' I noticed one or two others doing the same thing and we caught each other's eyes. It wasn't saying anything but it was a look, you know, what the hell?



On the quarter deck of HMNZS *Pukaki* preparing for the Grapple 1 test, May 1957 (Roy Sefton is fourth from right)

Source: Courtesy Roy Sefton.

After the first test on 15 May, *Pukaki* passed within 6 nautical miles of the ocean surface 'zero point', as it returned towards the flagship HMS *Warrior* to hand over meteorological results and equipment.

For the third test on 19 June, the two frigates reversed their stations, with the *Pukaki* stationed further away. At the end of the three Malden Island tests, the frigates set sail on 25 June to return to New Zealand, arriving in mid-July. Questioned by the media, one Māori sailor described the bomb: 'Boy, she was a beaut!'⁶

After the initial three tests, it was clear that the devices had not reached the required yield as thermonuclear weapons. Given the failure to achieve a yield of 1 megaton, the British Government then decided to conduct further tests in late 1957 (see Chapter 12). As the light aircraft carrier and flagship HMS *Warrior* had already departed the Pacific, the decision to relocate the tests to Christmas Island allowed for command and control from the scientific bunker on the island.

With London debating whether to proceed, the New Zealand Government also discussed whether it should continue to provide naval support. Newly appointed Prime Minister Keith Holyoake finally confirmed that New Zealand ships would again deploy for the testing program until May 1958, telling the British Government:

I am relieved to note that after this, you do not foresee need for further trials for at least 18 months and perhaps longer. You will, I am sure, appreciate logic of question which is increasingly being asked by average citizen in this part of the world—why, if there is no danger from these tests, do the British and Americans not hold them near to home?⁷

In October, the two frigates returned to Christmas Island in time to conduct weather monitoring for the Grapple X test, scheduled for 7 November. However, before the ships left port, there was no public announcement in New Zealand of the new deployment. It was a time of growing public opposition to the South

Pacific tests and many members of the opposition Labour Party were calling for a nuclear test moratorium. With national elections looming on 30 November, Labour seemed likely to replace the governing National Party.⁸

Most sailors aboard the New Zealand frigates had little knowledge of the growing public debate over nuclear weapons—not just in New Zealand but across the Pacific region. Even so, despite being one of the younger members of the crew, Sefton had a personal interest in nuclear issues. As a radio operator, he also had the opportunity to hear news of what was going on in the outside world:

As a youngster, I had a fascination with the bombings of Hiroshima and Nagasaki. So I had a little bit of knowledge and knew that the bomb could cause ongoing health problems. I was quite surprised to find that a number of people I served with at the time knew nothing about nuclear weapons, except that a big bomb had flattened a couple of cities.

Leading up to the Christmas Island nuclear tests, we radio operators and signallers were handling communications coming into the ship, so we were aware of what was going on. Others on the ship never had a clue. Because of my position, I had a little knowledge of what we were going to do and what the possible consequences might be—and for myself, it did cause some nervousness.

As a junior member of the radio team, Sefton was required to improve his Morse code during his own spare time. As a training exercise, he used to listen to Press Association broadcasts in Morse to improve his capacity to record incoming messages from the fleet. But listening to the media reports and translating them from dots and dashes into English broadened his knowledge of how the world outside was viewing the tests:

What I was getting from time to time was all these reports about protests against nuclear testing, which nobody else on the ship was getting. People in the UK were pushing prams to Aldermaston in protest, there were protests in New Zealand and I even received a newspaper clipping from my mother that the Japanese were intending to send a flotilla of protest yachts.

You're sort of thinking to yourself: 'The outside world is protesting about the dangers of the stuff, so what the hell am I doing here?' I wasn't that naive that I believed all the stuff they told us about safety precautions was sufficient. The big giveaway was the instruction that you had to urgently get to shelter station if anything went wrong.

The frigates had been rigged with a system of hoses and spray heads to wash down the upper surfaces of the ship with seawater, as a crude device to prevent fallout from settling on the decks. For the early tests, sailors were issued with anti-flash gloves and hoods, white overalls (for officers) and tinted goggles. The NZ sailors also followed protocols issued for the British warships, with training in safety precautions well before D-day:

The orders came from the United Kingdom that a skeleton crew was to run the ship below decks during the detonation, while the maximum number of crew was to be on deck to observe them. That raises the question in your mind—why? They practised what might arise if we encountered fallout. You had to get all the men that were on deck to shelter stations.

You witnessed the detonation at what they called 'blast stations' and if we encountered radiation, the crew had to be moved very quickly from the deck to 'shelter stations'. The intensity of these training exercises became more frequent as we moved closer to the day. But they were terrible conditions, remembering it was nearly on the Equator. You might be down in the magazine with no ventilation, fully dressed with no skin showing. I believe one guy couldn't stand up to it and was taken off the ship and sent back to New Zealand.

The elaborate training and safety precautions taken for the Malden Island tests were not continued when Operation Grapple continued at Christmas Island. For Grapple X, for example, the crew abandoned much of the protective gear used in earlier tests, apart from goggles to lessen the flash of the detonation.

Even so, the megaton Grapple X test caused considerable damage from heat and blast, as reported by two US military observers at the test:

The blast wave that hit the Joint Operations Centre at 23 to 27 miles distance broke practically all the quarter inch reinforced glass windows in the scientists air-conditioned building, as well as cracking the many windows that were left open ...

The following day, Admiral Patrick took a trip to the South East point by helicopter and observed at a distance of 6 ½ to 10 miles from Ground Zero that timber and debris thrown up onto the beach were burning with a great deal of flame. On landing a point about 5 miles from point zero, birds were observed to have their feathers burnt off, to the extent that they could not fly. Dead fish were reported to have washed ashore.⁹

For the massive Grapple Y test on 28 April 1958, *Pukaki* was once again stationed about 80 nautical miles to the east of 'surface zero'. Engines were stopped to allow the maximum number of sailors to view the test, which had become so familiar that the crew wore no protective clothing.

Sefton recalls that over time, the NZ vessels had moved closer to the actual detonation point for each test:

If you look at the positions of the ships, the distance from ground zero decreases with every test, until the ninth detonation when they were only 20 miles away. What also disappears is the protective clothing.

I contrast conditions under the first test with those for Grapple Y, which was the biggest test that they did. It was the one known as 'the bomb that went wrong'. For the Grapple Y test, the ship was not closed down into damage control and as I stood on deck, I watched it in a pair of shorts and flip-flops. It was that casual, there was no 'blast stations'.

After watching the blast, I remember I went down to my locker to get some coins to spend later at the ships canteen. But the blast wave from that detonation was the biggest that I've experienced. It gave me such a fright that the money flew out of my hand, as the ship rolled to starboard.

The British Government has long argued that the naval flotilla was located upwind from the tests at sufficient distance to protect crews from any radioactive fallout. But veterans have contested these claims, highlighting the way that after the tests, some ships passed near ground zero or under the path of the radioactive plume.

The day after Grapple Y, as it returned to Christmas Island, *Pukaki* passed directly through the surface zero point. During monitoring of sea water through the boiler room inlets, the crew were astonished to record significant radiation levels in the water—the first time radiation was monitored below deck. Radiation levels were soon found to be at lower levels than first thought, with human error causing the initial panic, according to then Able Seaman Gerry Wright:

On Tuesday morning, *Pukaki* passed through ground zero on its way back to the London Roads. As it approached the area, Bernard Commons was sent down to the boiler room to monitor any radioactivity in the seawater. He quickly drew up a recording graph and began testing the seawater ...

Unfortunately, Bernard had made an error in the vertical axis of the graph by a multiple of 10. As the recording progressed, he realised his error, but had no time to recalculate the graph. The on-watch stoker Petty Officer, on being asked for more paper by Bernard, became terrified as the graph rocketed upwards. Bernard wondered if the Petty Officer ever believed him that he had made an error in drawing up the graph by slipping the decimal point one way, rather than they had run into an unexpected super high radiation level.¹⁰

Roy Sefton argues that, over time, there were many pathways for sailors to be affected by fallout, which rained from the clouds after some tests:

We were always running short of fresh water, we couldn't condense it fast enough. On many occasions, the officer of the watch would spot a raincloud on the horizon. We would change course to go into it, so that we could shower and clean teeth and wash clothes in freshwater.

I remember it well: we used to slant the awnings so the water ran off in great volumes and you could collect it in buckets. I believe that it was in those periods that radioactive contaminants entered our bodies either through inhalation or ingestion. There they stuck, pulsing away for 30 or 40 years.

The first of four Grapple Z tests, codename Pennant, was an atomic device suspended from barrage balloons 450 metres above the south-east point of Christmas Island. On 22 August 1958, *Pukaki* was closer to the action than scheduled, according to the NZ Defence Force study of the operation:

Because of a faulty star sight, the *Pukaki* was 28 nautical miles to the east of surface zero, five miles closer than the planned viewing position. All of the ship's company apart from six men required to man the wheelhouse, engine and boiler rooms were mustered on the deck. The crew faced away from the test site until 15 seconds after the blast before turning to see the fireball rise and the mushroom cloud form.¹¹

In following years, Sefton began to suffer adverse health effects, which he now attributes to his involvement at Operation Grapple:

At age 30, I was a Petty Officer and close to promotion as a Chief Petty Officer. I really wanted to stay in the Navy till I'd served my 20 years. But my health was deteriorating. At the time, I felt that if I'd signed on again, I wouldn't have lasted the distance.

I'd stayed on in the Navy for 14 years and was suffering widespread joint and muscle pain, stiff necks and things like that. I also noticed that I was experiencing unexplained fatigue. I was having trouble staying awake during my times on watch, although with the job I had it was imperative to stay alert. If you'd slept on watch, you would have been demoted back the mess deck, so I left the Navy.

My mistake was that I didn't look ahead. At the time, I wasn't thinking about war pensions or anything like that, so I didn't report my ailments to the Navy. In those days, unless the injury was pretty obvious, they'd give you a couple of paracetamol and tell you to return to duty.

In 1987, the Labour Government led by Prime Minister David Lange introduced the New Zealand Nuclear Free Zone, Disarmament and Arms Control Act to declare New Zealand's land, air and territorial sea as a nuclear-free zone.¹²

The same year, Auckland-based doctor Graham Gulbransen, a member of the International Physicians for the Prevention of Nuclear War, began to inquire into the health of the New Zealand Christmas Island veterans, sparking extensive debate in the media.¹³ The public debate led to government responses, including a 1989 NZDF study by John Crawford and a 1990 medical study conducted by a team led by Associate Professor Neal Pearce of the Wellington School of Medicine.¹⁴

The 1990 Pearce study found an elevated level of leukaemia amongst the veterans and a supplementary report in 1996 noted:

Although the numbers are very small, the leukaemia findings are of particular interest due to their consistency with a previously published large study of United Kingdom participants in the atmospheric nuclear weapons test program. It is concluded that some leukaemias and possibly some other haematological cancers, may have resulted from participation in a nuclear weapons test program. There is little evidence of an increased risk of cancers, other than haematological cancers, and there is no evidence of an increased risk for causes of death other than cancer in New Zealand participants in the test program.¹⁵

Many veterans were highly critical of government attempts to downplay potential health impacts, and the limited number of health conditions that they attributed to exposure to radiation.¹⁶ On 2 July 1995, Roy Sefton and his wife Joan met with Christmas Island veteran Tere Tahi to found the New Zealand Nuclear Test Veterans Association (NZNTVA). The record of the founding meeting notes that:

Several issues were discussed with the understanding that it was high time and association was established, as more and more of our veterans have journeyed to the heavens above ... The question of compensation was spoken of light heartedly, with much emphasis being placed more on apology. Further discussions on this matter will need to be addressed after formation of the association.¹⁷

During the first NZNTVA conference in 1996, the sharing of stories meant that the poor health of the veterans and the impact on their families became dramatically clear. Former captain of HMNZS *Pukaki*, Commodore Richard Hale, OBE, RNZN Rtd (who witnessed the first three tests at Malden Island) became NZNTVA's patron. A campaign was immediately launched to secure pensions from the NZ Government and upgrade the pension grading for Operation Grapple veterans and their widows to War and Emergency status, which was achieved in 1998.



Roy Sefton QSM, Chair of the New Zealand Nuclear Test Veterans Association (NZNTVA)

Source: Nic Maclellan.

In the 1999 New Year's Honours list, Roy Sefton was honoured with the Queen's Service Medal for Public Service (QSM), for his part in obtaining War Disability Pensions and Surviving Spouses Pensions for NZ Grapple veterans and their widows. The QSM citation noted:

He has worked tirelessly to gain recognition for the men whose health suffered as a result of their service on *HMNZS Pukaki* and *HMNZS Rotoiti* at Christmas Island during the nuclear testing of 1957 and 1958. Because of his commitment the men who served on *Pukaki* and *Rotoiti* were awarded full war pensions in March 1998.¹⁸

Over the next two decades, Roy Sefton and other members of the NZNTVA would continue to campaign for recognition of their service with Operation Grapple. As Chapter 20 will show, independent medical studies have documented significant genetic impacts for the New Zealand naval contingent. For troops based ashore, there were similar concerns.

1 Interview with Roy Sefton, Palmerston North, New Zealand, November 2015. Unless otherwise noted, direct quotes from Sefton come from this interview.

2 This chapter draws on the wonderfully comprehensive book by Gerry Wright: *We Were There—Operation Grapple* (Zenith Print, New Plymouth, n.d.) and a 1989 New Zealand Defence Force study (declassified in 1996) by John Crawford: *The involvement of the Royal New Zealand Navy in the British nuclear testing programmes of 1957 and 1958*, research paper for New Zealand Defence Force Headquarters, Wellington, New Zealand, 1989 (hereafter 'NZDF report').

3 Michael Wynd: 'From Participation to Protest: The Royal New Zealand Navy and Nuclear Testing 1957–1995', presentation to the biennial Sea Power Conference, Sea Power Centre, Sydney, Australia.

4 Only 3 per cent of the crew witnessed all nine tests, but 17 per cent witnessed at least one test. Data from Neal Pearce et al: *Mortality and cancer incidence in New Zealand participants in United Kingdom nuclear weapons tests in the Pacific*, Department of Community Health, Wellington School of Medicine, 7 March 1990.

5 John Crawford: NZDF report, op. cit., p. 6.

6 'Hydrogen bomb "was a beaut"', *Auckland Herald*, 17 July 1957.

7 Barry Gustafson: *Kiwi Keith—a biography of Keith Holyoake* (Auckland University Press, Auckland, 2007). Holyoake had replaced Sidney Holland as leader of the governing National Party on 20 September 1957.

8 In a narrow victory, Labour leader Walter Nash won 41 seats to the National Party's 39, with Nash replacing Holyoake as Prime Minister on 12 December 1957. Despite rank and file party sentiment, the new Labour government did not end New Zealand's involvement in Operation Grapple, with the Royal New Zealand Navy (RNZN) continuing deployments for the remaining five tests in 1958.

9 Brigadier General J.W. White (Deputy Chief of the Armed Forces Special Weapons Project, USAF) and Rear Admiral G. S. Patrick (Director, Atomic Energy Division, Office of the Chief of Naval Operations): *Report of United States observers of a nuclear test*, Atomic Energy Commission, AEC 663/13, 10 December 1957. Marshall Islands Nuclear Documentation Database (MINDD).

10 Gerry Wright: *We Were There*, op. cit., pp. 189–190. See also John Crawford's account of the incident in the NZDF report, op. cit., p. 52.

11 John Crawford: NZDF report, op. cit., p. 54.

12 David Lange: *Nuclear Free: The New Zealand Way* (Penguin, Wellington, 1991).

13 'H-Bomb witnesses sought', *Dominion*, 21 July 1987; 'Sailor rubbishes Navy's claim of bomb test checks', *Evening Post*, 1 August 1987; 'Cancer check on Kiwi sailors at nuclear tests', *Evening Post*, 20 August 1987.

14 John Crawford: NZDF report, op. cit.; Neal Pearce et al.: *Mortality and cancer incidence in New Zealand participants in United Kingdom nuclear weapons tests in the Pacific*, Department of Community Health, Wellington School of Medicine, 7 March 1990.

15 Associate Professor Neal Pearce: *Mortality and cancer incidence in New Zealand participants in United Kingdom nuclear weapons tests in the Pacific: supplementary report*, Department of Medicine, Wellington School of Medicine, June 1996.

16 See, for example, 'Why RIMPAC have been so scathing on the Pearce reports 1990-1996', *Prickley Heat*, November 1997, p10.

17 Minutes of the founding meeting of the New Zealand Nuclear Test Veterans Association (NZNTVA), signed by Roy Sefton and Tere Tahī (copy in author's files).

18 *New Year Honours List 1999*, Department of the Prime Minister and Cabinet, New Zealand.

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