

# Cleaning up Johnston Atoll

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## Recommended Citation

"Cleaning up Johnston Atoll", APSNet Special Reports, November 25, 2005,  
<https://nautilus.org/apsnet/cleaning-up-johnston-atoll/>

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From the beginning of the nuclear age, the peoples of the Pacific islands have borne the brunt of nuclear weapons testing by France, Britain and the United States. Seeking “empty” spaces, the Western powers chose to conduct Cold War programs of nuclear testing in the Pacific. Between 1946-1996, over 315 atmospheric and underground nuclear tests were conducted at ten different sites in the desert of Australia and the islands of the central and south Pacific. The nuclear powers showed little concern for the health and well-being of nearby island communities, and those civilian and military personnel who staffed the test sites.

Between 1946 and 1958, the US military conducted 67 nuclear tests at Bikini and Enewetak Atolls in the Marshall Islands. Less well known are the US nuclear tests on Johnston Atoll in 1962.

Johnston Atoll is located between the Marshall Islands and Hawai’i, and is known to the Kanaka Maoli people as Kalama Island. The island was claimed for the Kingdom of Hawai’i in July 1858, with the support of King Kamehameha. With the US take-over in Hawai’i in 1898, Johnston effectively became a US possession, even though the Territory of Hawai’i continued to claim jurisdiction over Kalama Island and Sand Island (which made up the atoll) into the twentieth century.

Johnston was used by the US military from 1934 until 2000, and the island was expanded many times in size through dredging and reconstruction. Beyond the 1962 nuclear tests, Johnston Atoll was used to store chemical weapons from Okinawa after 1970 and drums of Agent Orange defoliant from the Vietnam War in 1972. Throughout the 1990s, the island was also the site for the Johnston Atoll Chemical Agents Disposal System (JACADS), an incineration plant for chemical weapons removed from Okinawa and Germany following the end of the Cold War.<sup>1</sup>

The US military has now closed down JACADS so the island can be handed over the US Fish and Wildlife Service as a nature reserve. A deeper problem remains – how to clean up plutonium contamination from failed nuclear tests in 1962.

During the Operation Hardtack series in 1958, most US nuclear tests were conducted at Bikini and Enewetak atolls in the Marshall Islands, but the US military used Johnston atoll for two nuclear tests during the series. From 22 April to 19 August 1958, administration of Johnston Atoll was assigned to the Commander of Joint Task Force Seven for the duration of the test series. The 1 August test codenamed Teak and the test codenamed Orange of 12 August 1958 both involved 3.8-megaton

explosions from rockets launched from Johnston Atoll. After the tests were completed, the island reverted back to the command of the US Air Force.

In 1962, the US military conducted a nuclear test series of 36 detonations at Christmas Island and Johnston Atoll, codenamed Operation Dominic. The tests were conducted in a rush, in an effort to beat the 1963 Partial Test Ban Treaty. The first phase (codenamed Dominic I) was held from 25 April to 11 July 1962, and the second phase (Dominic II) from 2 October to 3 November 1962.

During the first phase, 24 nuclear weapons were dropped from aircraft for airbursts in the vicinity of Christmas Island. One warhead was sent aloft by Thor rocket from Johnston Atoll for high altitude detonation. Three other attempted launches of nuclear tipped rockets from Johnston were failures.

During the second phase, four nuclear warheads were fired on rockets from Johnston Island for high altitude detonation - one rocket launch was a failure. Five weapons were also dropped from aircraft for airbursts in the vicinity of Johnston Island. The high altitude tests were designed to discover the effect on communications or stopping incoming ballistic missiles. The effect of these high level explosions lit the sky from Australia to Hawai'i, causing an enormous electromagnetic pulse that put out streetlights in Honolulu, 1300 kilometres away.

There were three successful launches of missiles armed with nuclear warheads at Johnston Atoll during the Dominic series: Starfish Prime, Bluegill Triple Prime and Kingfish. But four other nuclear missile launches from Johnston were aborted. Plutonium contamination was caused by three of these failed tests, causing radioactive pollution on the island that still lingers today.

The high altitude test codenamed Bluegill on 3 June 1962 started normally, but as the missile neared the point of detonation high in the sky after 13 minutes of flight, the tracking ships lost contact with it. The safety team decided to detonate the warhead by remote control, and the missile was destroyed at high altitude about 36 kilometres south of the atoll. No contamination was recorded at the atoll.

The first of the contaminating accidents came on 20 June 1962 from the Starfish test. The launch of a Thor missile carrying a nuclear warhead was aborted a minute into its flight, and a self-destruct order blew the missile apart at a point estimated at 30,000 feet. Large pieces of radioactive debris (including pieces of the booster rocket, engine, re-entry vehicle and missile parts) fell back to the island. In 2000, the US Defense Threat Reduction Agency (DRTA) conducted the *Johnston Atoll Radiological Survey* (JARS), which noted:

"More debris landed in the surrounding waters and on adjacent Sand Island, where residual plutonium from the test device was found. A large collection of alpha contaminated scrap was isolated during the initial cleanup...It is likely that some portion of the plutonium was pulverised and consequently dispersed in the winds occurring between the destruct altitude and the ground and thus did not contribute to contamination at JA. It is however also likely that residual plutonium, in addition to that recovered from Sand Island, fell into the waters of JA."<sup>2</sup>

The test codenamed Bluegill Prime on 25 July 1962 caused the most serious contamination. After a malfunction on the launch pad, officials destroyed the rocket by remote control after ignition but before the rocket had lifted off. The explosion of the Thor missile scattered debris in all directions. The US DRTA radiological study describes the Bluegill Prime disaster:

"Plutonium material mixed with the flaming fuel drained into trench cables and was carried away in

the smoke from several fires. This resulted in a deposition of alpha contamination on the launch pad complex that represented a major contamination problem. Contaminated debris was scattered throughout the wire-enclosed pad area and neighbouring areas. Metal revetment buildings were highly contaminated with alpha activity. Burning fuel flowing through cable trenches caused contamination on the interior of the revetments and all equipment contained therein. Fuel, which spilled and flowed over the compacted coral surrounding the launch mount and revetments resulted in highly contaminated areas. Prevailing winds at the time of the destruction caused general contamination of all areas downwind of the launch mount.”<sup>3</sup>

In an effort to continue with the testing program, US troops were sent in to do a rapid clean up. The troops scrubbed down the revetments and launch pad, carted away debris and removed the top layer of coral around the contaminated launch pad. The plutonium-contaminated rubbish was dumped in the lagoon, polluting the surrounding marine environment. The JARS study politely notes:

“Sea-disposal of radioactive waste for control of the radiological hazard was then considered expedient and proper...there was no effort made to analyze the magnitude and extent of the radiological hazard resulting from the destruction of a nuclear device on a launch complex.”<sup>4</sup>

At the time of the Bluegill Prime disaster, the top fill around the launch pad was scraped by a bulldozer and grader. It was then dumped into the lagoon to make a ramp, so the rest of the debris could be loaded onto landing craft to be dumped out into the ocean. An estimated 10 per cent of the plutonium from the test device was in the fill used to make the ramp. Then the ramp was covered during later dredging to extend the island (The lagoon was dredged in 1963-4 and used to expand Johnston Island from 220 acres to 625 acres). The JARS study notes that:

“much of these [contaminated] sediments may have been incorporated back into the islands in the 1964 dredging and filling work, and thus much of the plutonium contamination from Bluegill Prime may have been redeposited on the island. Any contamination not redeposited on the island through dredge and fill still contaminates the lagoon”<sup>5</sup>.

The Bluegill Prime disaster seriously affected the health of US Naval Air Force, Navy Patrol Squadron Six, Flight Crew One, who were present at Johnston Island during Starfish, Starfish Prime, and Bluegill Prime. One crewmember Michael Thomas notes that the flight crew and ground support staff were trapped on the Island following the destruction of the 1.4-megaton warhead of Bluegill Prime. The Squadron members of ‘VP-6’ present during that episode suffered an 85% casualty rate of illness and cancers in subsequent years: non-Hodgkin’s lymphoma was the biggest killer plus thyroid cancer, throat cancer, oesophageal cancer, kidney cancer, multiple myeloma, and various skin cancers. 30% of the crew experienced reproductive inefficiency up to and including stillbirth and deformities.<sup>6</sup>

On 15 October the same year, another test misfired. In the Bluegill Double Prime test, the rocket was destroyed at a height of 109,000 feet after it malfunctioned 90 seconds into the flight. US Defence Department officials confirm that when the rocket was destroyed, it contributed to the radioactive pollution on the island.

From 1963 to 1970, Johnston was maintained as a testing site in a state of “readiness to test”, in case the US President decided to breach the Partial Test Ban Treaty of 1963. More than 550 drums of contaminated material were dumped in the ocean off Johnston in 1964-5. Since then, US defence authorities have surveyed the island in a series of studies, and collected 45,000 tonnes of soil contaminated with radioactive isotopes. Plutonium pollution was heaviest near the old rocket launching site, in the lagoon offshore the launch pad and near Sand Island. The contaminated soil was dug up and collected on the north of the island, in a fenced area covering 24 acres.

As with all Pacific nuclear test sites, the end of nuclear testing has not ended the nuclear hazard for the peoples of the Pacific. The US government must take responsibility for the full clean up of Johnston Atoll.

## About the author

Nic Maclellan has worked as a journalist, researcher and community development worker in the Pacific islands, and worked with the Pacific Concerns Resource Centre (PCRC) in Fiji between 1997-2000. He has written widely on disarmament, human rights and environment in the Pacific islands, and is co-author of three books on Pacific issues including: *La France dans le Pacifique - de Bougainville à Moruroa* (Editions La Découverte, Paris, 1992); *After Moruroa - France in the South Pacific* (Ocean Press, Melbourne, 1998); and *Kirisimasi - Na Sotia kei na Lewe ni Mataivalu e Wai ni Viti e na vakatovotovo iyaragi nei Peritania mai Kirisimasi* (PCRC, Suva, 1999).

## References

- 1 Nic Maclellan: "Radiation on Johnston Atoll - cleaning up the Cold War", *Pacific News Bulletin*, August 2000.
- 2 US Defense Threat Reduction Agency (DRTA): *Johnston Atoll Radiological Survey* (JARS), 6 January 2000, page 1-18. For testimony of US service personnel who served on Johnston Atoll at the time of the tests, visit the Atomic Veterans History Project on the Internet: [www.aracnet.com/~pdxavets](http://www.aracnet.com/~pdxavets)
- 3 US DRTA: JARS, page 1-119-121
- 4 US DRTA: JARS, page 1-121
- 5 US DTRA: JARS, pages 1-22-23
- 6 Letter to the author from Michael Thomas, 28 November 2000. Thomas served at Johnston Atoll in 1962 as a member of US Naval Air Force, Navy Patrol Squadron Six, Flight Crew One.

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Nautilus Institute  
608 San Miguel Ave., Berkeley, CA 94707-1535 | Phone: (510) 423-0372 | Email:  
[nautilus@nautilus.org](mailto:nautilus@nautilus.org)