

Summary of nuclear testing in the Pacific Region, 1946-1996

Australia

The United Kingdom undertook 12 atmospheric tests in Australia between 1952 and 1957. Three tests were conducted at Montebello Islands located off the northwest coast of Western Australia, two tests were undertaken at Emu Field and seven tests were undertaken at Maralinga, both in South Australia. The total combined yield from the tests was approximately 200 kilotons (kt) of TNT equivalent. Approximately 600 trials involving nuclear weapons components, including trials involving the deliberate destruction of nuclear weapons, were also undertaken.

Most tests at the three Australian locations were detonated close to the surface, resulting in primarily local fallout. Air and surface fallout monitoring were undertaken at Australian mainland population centres for the final nine tests. This revealed that low but measurable fallout downwind from the test sites in some cases reached east Australian coastal areas. Some areas of the Maralinga test site were also contaminated with plumes of plutonium from the weapons trials. These areas were the focus of remediation work from 1996 to 2000.

French Polynesia

France undertook 178 tests on Mururoa and Fangataufa Atolls in French Polynesia between 1966 and 1996 – 164 tests at Mururoa and 14 tests at Fangataufa. All 41 tests conducted until 1974 were atmospheric tests. The 137 tests conducted between 1975 and 1996 were detonated underground in the atolls' basalt basement rock at depths below 500 metres. The total combined yield from the tests was approximately 13.2 megatons (Mt) of TNT equivalent, of which atmospheric tests yielded 10 Mt. A further 15 safety trials – five atmospheric and ten underground - were conducted at Mururoa Atoll. The three underground trials that involved some release in fission energy were conducted in carbonate rock at depths below 280 metres.

Four early tests in 1966/67 were conducted at sea-level and are the main contributors to the residual radioactivity still present in the accessible environments of the two atolls. Other atmospheric tests were detonated at altitudes of between 220 to 500 metres, resulting in fireballs that did not reach the surface and contributing predominantly to regional and global fallout. The majority of regional fallout fell to the surface over the Pacific Ocean east of the test sites. On several occasions some fallout was deposited west of the test sites. The French government has reported that at least five tests resulted in some exposure to people in French Polynesia. Geomechanical monitoring of the test sites indicates some rock cracking associated with the underground tests and official reports have considered the risk of partial collapse of the northeast rim of Mururoa Atoll.

Kiribati

The United Kingdom undertook three tests near Malden Island (Central Line Islands) and six tests near Kiritimati Island (Northern Line Islands) in 1957 and 1958. The USA conducted 24 tests near Kiritimati Island during 1962. All 33 tests were atmospheric tests. The total yields from the tests were approximately 1.2 Mt at Malden Island and approximately 30 Mt at Kiritimati Island.

All tests were reported to be at altitudes that would result in predominantly global fallout. Radiological monitoring reports have consistently concluded that no ongoing contamination is present at Kiritimati Island.

Marshall Islands

The USA undertook 66 atmospheric tests on Bikini Atoll and Enewetak Atoll in the Marshall Islands between 1946 and 1958. Both atolls had resident populations who were relocated to other atolls. A total of 23 tests were conducted at Bikini Atoll, with a combined yield of approximately 77 Mt and 43 tests were conducted at Enewetak Atoll, with a combined yield of approximately 32 Mt.

Many of the tests conducted at both atolls were high yield tests detonated at surface level, producing significant amounts of local fallout. Surface soils and lagoon sediments of both atolls remain contaminated by longer-lived radionuclides, although remediation was undertaken at Enewetak Atoll in the late 1970s when highly-contaminated topsoil was removed and buried under a concrete dome structure on one of the islets. Some of the contaminated lagoon sediments continue to be resuspended and exported into the ocean each year. An estimated 20 tests resulted in measurable fallout being deposited on other atolls of the Marshall Islands. The most significant exposure occurred after the Castle-Bravo test at Bikini Atoll in 1954. In the hours after the test life-threatening radiation doses were received by people on the atolls of Rongelap and Ailinginae east of the test site, with lower doses received by people on atolls further east.

United States of America (Johnston Atoll)

The USA launched 12 atmospheric tests from Johnston Atoll, an unincorporated US territory located approximately 1330 kilometres west of Honolulu between 1958 and 1962. The total yield of the tests was approximately 21 Mt.

All tests were detonated at high or very high altitudes – one exoatmospheric test was detonated at 400 kilometres – resulting in predominantly global fallout. Test malfunctions occurred on four further occasions resulting in the non-nuclear destruction of the devices. These caused scattering of plutonium-contaminated debris over the ocean and on two occasions over Johnston Atoll itself.