Clearance Operations in the Pacific Islands

Golden West Humanitarian Foundation's mine- and explosive-remnants-of-war clearance operations in the Marshall Islands reduced remaining World War II munitions contamination. Humanitarian efforts helped Mili Island and Taroa Island inhabitants recover land with nonexplosive technology during the four-month initiative.

by Len Austin [Golden West Humanitarian Foundation]

An all-terrain vehicle is unloaded from a boat.
All photos courtesy of Len Austin/Golden West.

In early 2013, the Office of Weapons Removal and Abatement in the U.S. Department of State's Bureau of Political-Military Affairs (PM/WRA) tasked Golden West Humanitarian Foundation (Golden West) with explosive remnants of war (ERW) hazard-reduction operations on Taroa Island and Mili Island.

Taroa and Mili are two inhabited remote atolls in the Marshall Islands. The islands are comprised of 29 coral atolls and five individual islands, totaling 1,225 islands and 870 reef systems spread over 750,000 sq mi (1,942,491 sq km) of the Central Pacific Ocean.[1] Marshallese officials selected Taroa and Mili for the operation, as both islands had large quantities of U.S. and Japanese World War II (WWII)-era munitions. The hazard-reduction operations were unique due to the application of nonexplosive destruction procedures on recovered unexploded ordnance (UXO).

A crater left by a blast on Taroa Island.

History

Prior to WWII, the Japanese military established Taroa as a seaplane base, constructing an airfield on the island in 1939. From February 1942 to August 1945, more than 3,543 tons of bombs and 453 tons of projectiles hit the island, which measures only 1,480 m (1,619 yd) wide and 1,679 m (1,837 yd) long. The Japanese military had extensive defenses, including a mixture of British and Japanese 6-in and 12-cm coastal defense guns, 6-in howitzers, and 127-mm dual-purpose guns.[2]

Mili measures 1,500 m (1,641 yd) wide by 2,100 m (2,297 yd) long. Before WWII, infrastructure included an airfield with three runways, a radio-direction beacon, weather station and seaplane base. The island had a fortified defense similar to Taroa (6-in and 14-cm coastal defense guns, 127-mm dual-purpose guns and 10-cm mortars).

Organizations

The U.S. Embassy in Majuro, Marshall Islands, organized the project with assistance from the Marshall Islands Ministry of Internal Affairs and the Ministry of Foreign Affairs, and Golden West explosive ordnance disposal (EOD) personnel conducted the initial site survey. Marshall Islands representatives escorted Golden West personnel to the site and assisted in the survey organized by representatives of the Republic of the Marshall Islands Historic Preservation Office (RMIHPO). The Environmental Protection Agency (EPA) also provided guidance to personnel working on various UXO-contaminated sites, and during the operation acted as a liaison to police and inhabitants of Mili and Taroa Islands. As air transport was unavailable during the survey, personnel traveled from Majuro Island to Mili and Taroa by fishing boats. Civilians from both islands helped identify UXO sites and indicated possible living and working areas to personnel. In addition, locals identified a burn-out site and an area where personnel could perform munitions cutting; EPA and RMIHPO representatives approved these locations.

Operations

Golden West personnel consisted of a team leader, three workers and a medic (two Golden West Khmer staff and two Solomon Island personnel trained by Golden West), along with two representatives from RMIHPO. Equipment was

Burned out bombs and projectiles.

limited to a remotely operated Mobile Bomb Cutting System, hoist system, generator, all-terrain vehicle with a trailer and EOD field tools. A landing-craft utility transported all fuel (diesel) to the islands along with food and hand-held, water-filtration systems, which were loaded into a container. On both islands, staff established the base camp and introductions were made with representatives from Mili and Taroa. Primary subsurface clearance zones were established with priority given to areas closest to inhabited locations. The islands' mayors and police chiefs approved burn-out sites and designated burn-out times.

Golden West's remotely-operated Mobile Bomb Cutting System cut UXO to expose the explosive filler. Once cut, the munitions were placed in burn sites with dunnage and allowed to burn overnight. All hazardous materials (i.e., explosive filler, fuzes and incendiaries) were effectively burned out, leaving the remaining materials explosive-free. The metal parts were returned to RMIHPO.

Results

On Taroa, Golden West processed 77 pieces of UXO (consisting of projectiles and bombs) from 27 June to 7 July 2013 with a total combined weight of 3,577 kg (7,886 lb). On Mili, Golden West processed 104 pieces of UXO (consisting of projectiles and bombs) from 8 to 20 July 2013 with a total combined weight of 3,726 kg (8,215 lb).

Recommendations

Taroa will require further subsurface clearance operations, which will involve heavy brush clearing and excavation work. Formerly an ammunition supply point (ASP), the area was destroyed, leaving behind a water-filled crater the size of a football field. Large quantities of munitions were found inside the crater, including large Japanese Type No. 25 and Type 3 No. 25 Mk8 bombs as well as various Japanese projectiles. The area is overgrown with low lying foliage, covering chunks of concrete from the destroyed ASP. Currently, the area is marked off-limits to inhabitants.

Item	Qty
Japanese Type 91 AP 15.5cm Projo	3
Japanese 7cm (75mm) Type 94 HE Projo	2
Japanese Type 98 No7 Mk6 Bomb Model 2	1
Japanese No. 25 Ordinary Bomb Model 2	1
Japanese Type 3 No. 25 Mk8 Bomb Model 1	1
Japanese Type 97 No. 6 Bomb	4
U.S. 8 inch Mk25 Model 1 HC Projo	2
Total	**14**

Table 1. Taroa Island UXO destroyed.

Item	Qty
Japanese Type 91 AP 15.5cm Projo	32
Japanese 7cm (75mm) Type 94 HE Projo	61
Japanese 7 cm (75mm) Type 94 AP Projo	2
Japanese 12 cm Ordinary Model 1 HE Projo	3
Japanese Type 3 No. 25 Mk8 Bomb Model 1	5
U.S. 6 inch Mk34 Model Series HC	1
Total	**104**

Table 2. Mili Island UXO destroyed.

However, islanders practice a slash-and-burn method of farming, causing dry, dead brush to catch sparks and spread fires, which is very dangerous when UXO is nearby.

Golden West personnel on Mili relocated two Japanese Type 95 Depth Charges from an inhabited area to

Golden West's Mobile Bomb Cutting System.

the southwest handle of the island. Due to the toxic explosive filler, these could not be cut and burned. The Marshallese government approved a plan to float the depth charges on an improvised platform on the seaward side of the island and detonate charges using Golden West's Binary Liquid Explosive System, which uses organic nitroparaffins with a dye indicator and mechanical sensitizer. Additional areas located in the reefs' surf zone will also need munitions clearance, which can only be safely conducted at low tide, and is expected to take five days to complete.

Conclusion

Starting from the initial survey in March 2013 to completion in July 2013, the operation's planning and mobilization took approximately four months. By disposing of the islands' UXO with nonexplosive technology, the Marshall Islands government, U.S. Embassy, PM/WRA and Golden West were able to cooperate closely and achieve completion within the time frame. By using nonexplosive methods, the Marshall Islands government convinced island officials to agree to clearance operations, as the land was left intact, which rendered compensation for damages unnecessary. The land owners were happy to have their land recovered.

Future UXO-destruction operations in the Pacific Islands will need to incorporate nonexplosive methods of destruction. Subject to funding, Golden West is prepared to conduct future clearance operations on Taroa and surveys on Ebey, Janot and Mejit Islands. Land is a valuable commodity on these islands, and detonating munitions brings hardships to inhabitants. Using Golden West's Mobile Bomb Cutting System and burning methods on the cut munitions is an innovative and acceptable way of eliminating hazards that have threatened island inhabitants for the past 70 years.

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