



## *Unsinkable Guardian of Manila Bay*

**INTRODUCTION:** Anyone familiar with World War II history knows of the heroic but futile defense of Corregidor mounted by American military forces during the first few months of 1942. Much less known is a similar and valiant effort expended by the garrison of a tiny, adjacent installation located at the mouth of Manila Bay, named Fort Drum.

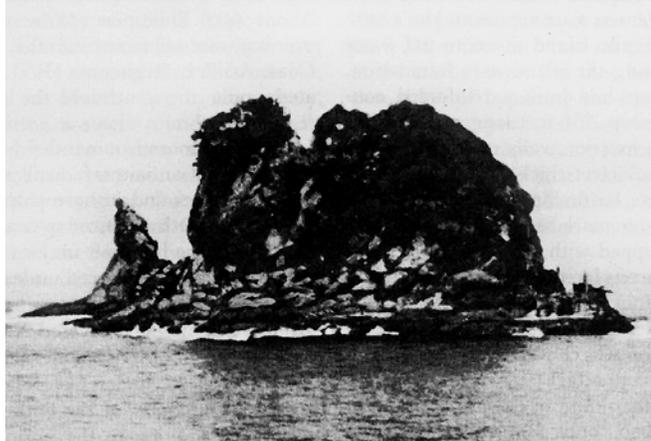
That outpost was once just a small outcropping of rock at the entrance of the bay which played an insignificant role in the Spanish-American War. Later transformed into what resembles a 'concrete battleship', this heavily fortified base was the last American position to surrender after Manila, Bataan and Corregidor were overrun by the Japanese.



Even today, it remains 'unsinkable', albeit slowly succumbing to the ravages of time after decades of being abandoned as a harbor defense installation.



**EL FRAILE ISLAND:** In the 1800s, when the Philippine Islands were under Spanish control, a few cannon were placed on El Fraile (The Friar) Island and the other islands situated at the mouth of Manila Bay. One such weapon is barely visible on the far right in this rare view of El Fraile. The intent was to deny passage into Manila Bay by an attacking force.



This proved to be an inadequate precaution, during the Spanish-American War of 1898. In the pre-dawn hours of May 1, 1898, US Navy vessels under the command of Admiral Dewey easily slipped past these defensive positions. When the American warships were spotted by Spanish gun crews on the islands, their ineffective gunfire was quickly silenced by Admiral Dewey's squadron. Although the shots fired from El Fraile provided a warning to Spanish warships at anchor just offshore from Manila, Admiral Dewey soon scored a decisive victory; effectively ending three centuries of Spanish rule in the Philippine Islands.

**CREATING FORT DRUM:** After that war ended, the United States annexed the Philippines. As part of a much more ambitious defense plan for Manila in the early 1900s, the four islands at the bay's entrance were heavily fortified. Corregidor, Caballo, Carabao and El Fraile islands were given the names of Fort Mills, Fort Hughes, Fort Frank and Fort Drum, respectively.

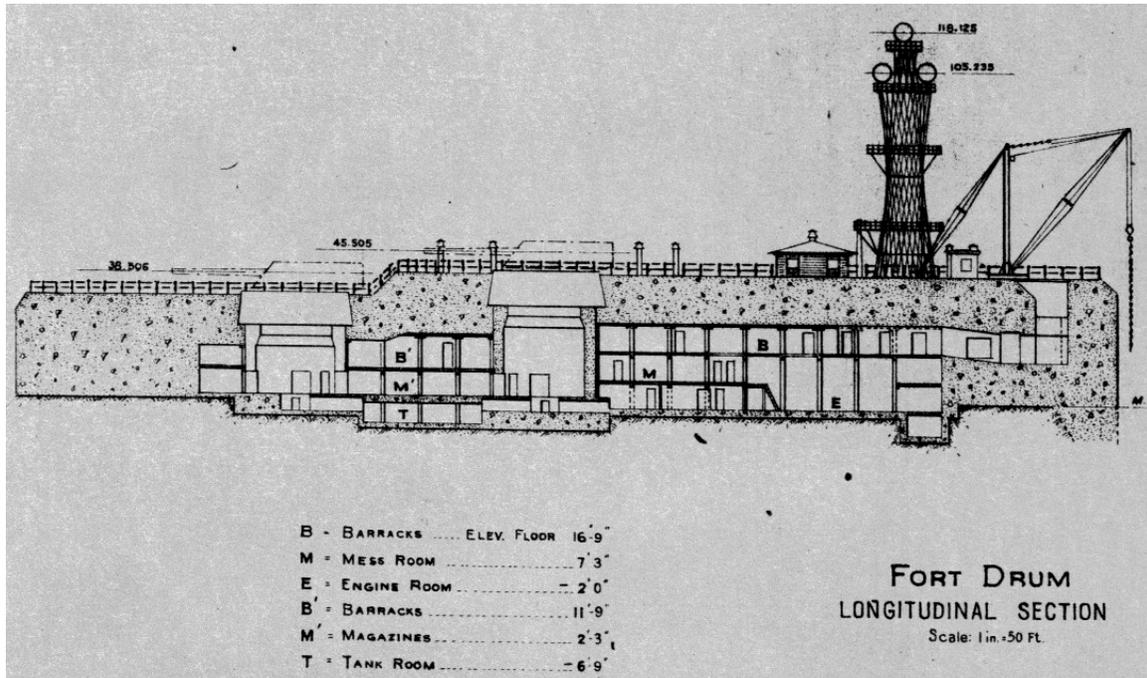


Fort Drum was named in memory of US Army Brigadier General Richard C. Drum, who passed away in 1909; the same year that work commenced on El Fraile Island. General Drum was an artillery officer who had served in the Mexican-American War, the American Civil War and the Spanish-American War.

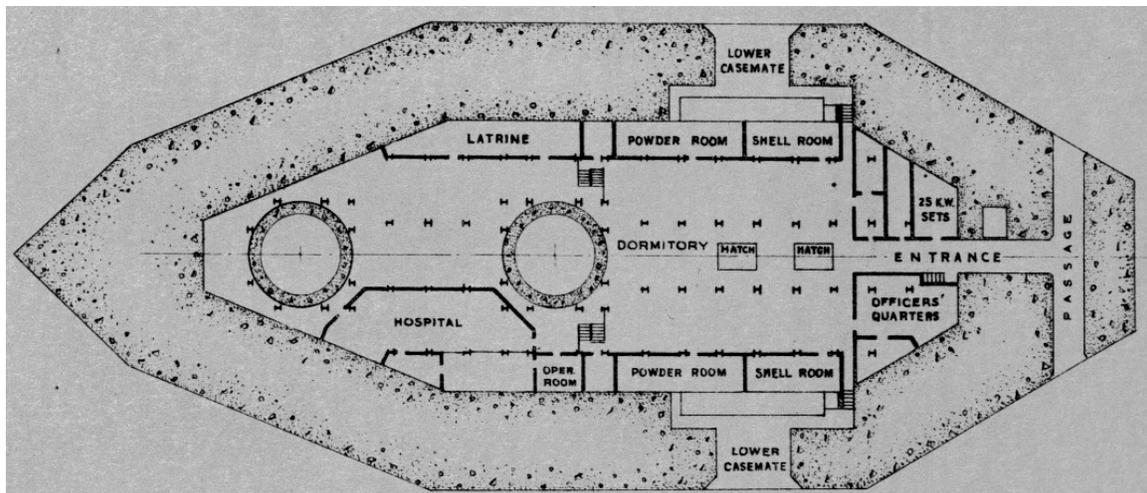
Although the newly named Fort Drum was the smallest, it soon became the most unique. It also was fitted with the largest naval rifles the US Navy possessed prior to World War I.

To create Fort Drum, the US Army Corps of Engineers cut down the little rocky island to below sea level. Using what remained as a foundation, a concrete fortification, shaped somewhat like a battleship, was built. When completed in 1913, and fitted with gun turrets and a tall 'cage mast', it looked so much like a battleship that passersby on ships entering Manila Bay sometimes erroneously referred to this curious, but immobile and unsinkable structure as the USS Drum.

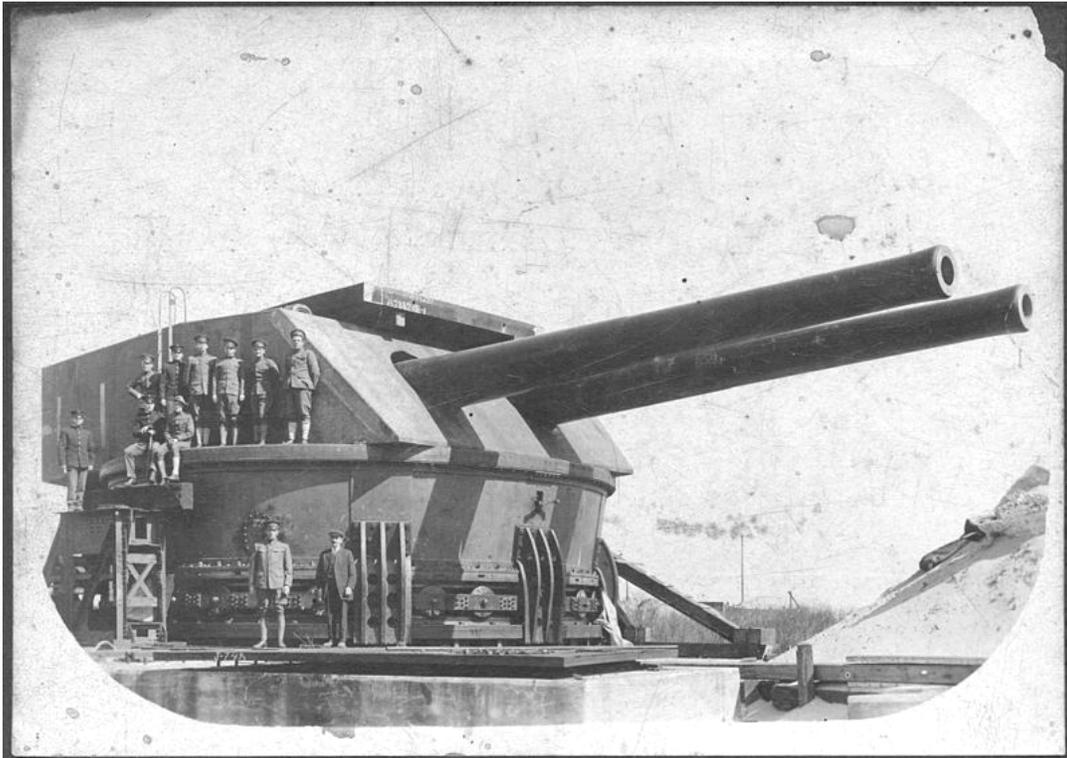
**CONCRETE BATTLESHIP PARAMETERS:** When structurally complete, the 'battleship' measured 350 feet in length, 144 feet wide and stood 40 feet above the surface of the bay at low tide. Internally, there were four levels, protected from enemy warship bombardment or aerial attack by eighteen feet of steel-reinforced concrete. The fort's exterior concrete walls were twenty feet thick.



Its engine room housed seven diesel-electric generators. Its cage mast, like those found on battleships of the early 20th century, stood 118 feet above the bay's mean low water mark. Searchlights were mounted on the mast's top. Adjacent to the mast was a five-ton service crane. Fort Drum included living quarters for a normal complement of 200 officers and enlisted men. The following plan view shows the extent of these quarters. A mess hall and galley were located one level below, and 14-inch gun powder and shells on a lower level.



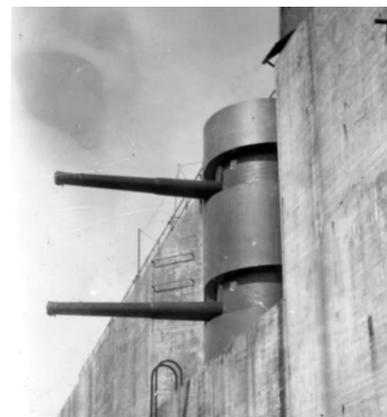
**ARMAMENT:** But the most distinctive feature of the concrete battleship was its main battery of four, 14-inch naval rifles, mounted in two revolving steel turrets. Fort Drum was the only American coastal defense installation to have fully enclosed steel turrets. The turrets sat atop steel barbettes, buried in concrete. These turrets were built in the United States and tested at an army ordinance base at Sandy Hook, New Jersey, where the following image was created.



Their place of manufacture is not recorded. But just ten miles from Sandy Hook, the Brooklyn Navy Yard was producing battleships with guns, turrets and barbets of very similar design when these twin turrets were created.

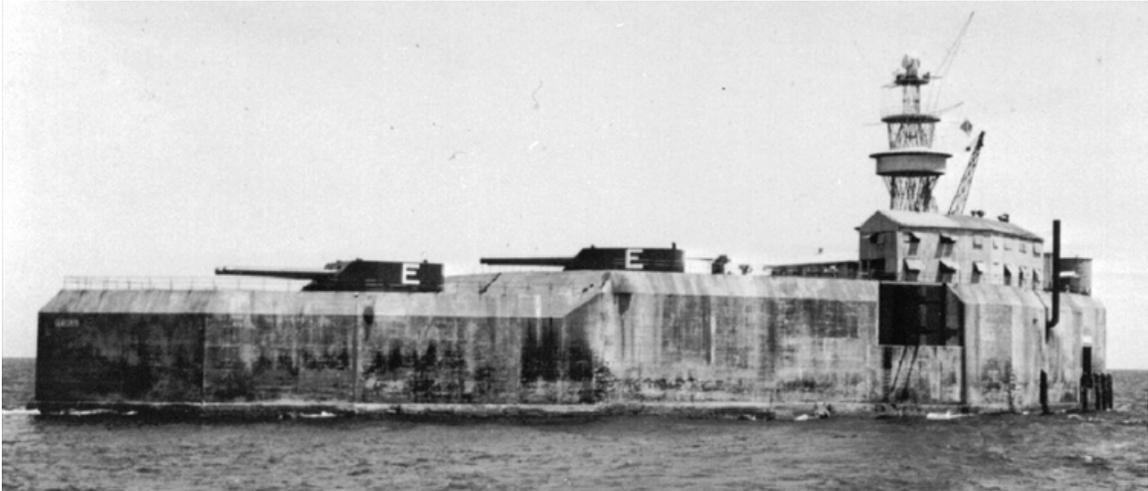
The turrets that housed these 14-inch guns were constructed of armor plating that was 16 inches thick in some places. Each of these electrical-powered naval rifles weighed 70 tons and was capable of hurling a 1,660 pound armor piercing shell 19,200 yards [10.9 miles]. No enemy warship could have approached the mouth of Manila Bay without risk of being damaged or sunk by Fort Drum's main battery.

Again, reminiscent of the design of early 20th century battleships, the concrete battleship was fitted with four 6-inch guns in two casemates located to either side of the installation. On the top deck, additional, smaller bore weapons were later installed for anti-aircraft defense purposes.



**1919-1941:** It took from 1909 until 1919 to complete the concrete battleship. The original estimated cost [in 1908 dollars] was \$1 million. Later records indicate this amount was exceeded 'considerably', but no exact figure could be found.

Touted as being impregnable, later events proved that was no idle boast.



Living conditions at Fort Drum in the tropical waters of the Philippines were undoubtedly difficult for the army artillerymen who were stationed there between 1919 and 1941. The concrete battleship's windowless interiors were inadequately ventilated by exhaust fans. In the 1930s, a two story barracks building was constructed atop the fort, as evidenced in the photo on right and in the above image. Made of wood, this ramshackle structure was clearly an afterthought.



Typical of similar scenes often created onboard naval vessels, the photo on the left was made at Fort Drum in the 1920s. Although the men assigned to that post routinely drilled, fired shots for practice and did maintenance, there were few pleasures available to them. One mentioned in letters home was catching huge sharks.

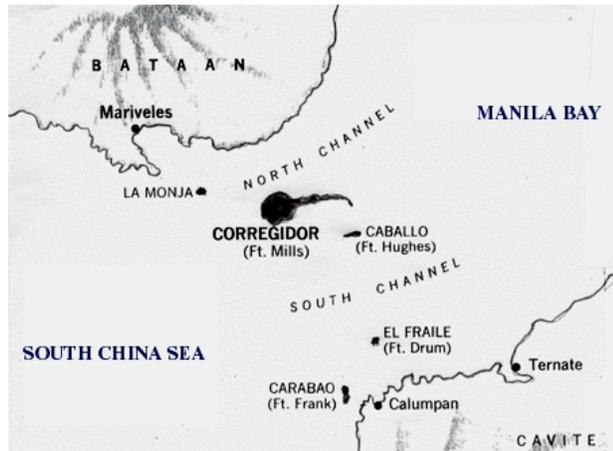
Another short-lived pleasure was playing volleyball on a court outlined on the concrete deck alongside the superimposed 14-inch gun turret [visible in this photo, c. 1936 taken from the top of the fort's cage mast].



Army records concerning the installation frequently refer to such physical features as Fort Drum's 'bow', 'stern', 'decks', 'engine room' and 'galley'; thus giving further credence to the nick-name 'concrete battleship'.

**PREPARING FOR A HEROIC DEFENSE:** Shortly after the dastardly December 7, 1941, attack on Pearl Harbor, the Japanese attacked American bases throughout the Philippines. In spite of being badly outnumbered and outgunned, and cut off from reinforcements or re-supply; isolated American and Filipino military forces in the Philippines managed to resist repeated Japanese onslaughts for almost six months.

The inspiring story of the spirited defense of Bataan and Corregidor has been told many times and need not be repeated here. However, the augmenting role in that effort played by Fort Drum has too often gone unappreciated.



Shortly after December 7th, the wooden barracks building atop the fort's uppermost deck was unceremoniously pushed over the side. This provided an unobstructed field of fire in all directions for the fort's superimposed 14-inch gun turret, which had a 360 degree transverse capability.

Two existing 3-inch anti-aircraft weapons, mounted on the fort's top deck were augmented by several 50-caliber machine guns. These latter weapons were deemed necessary for anti-aircraft defense purposes and also to ward off any waterborne invasion attempts.

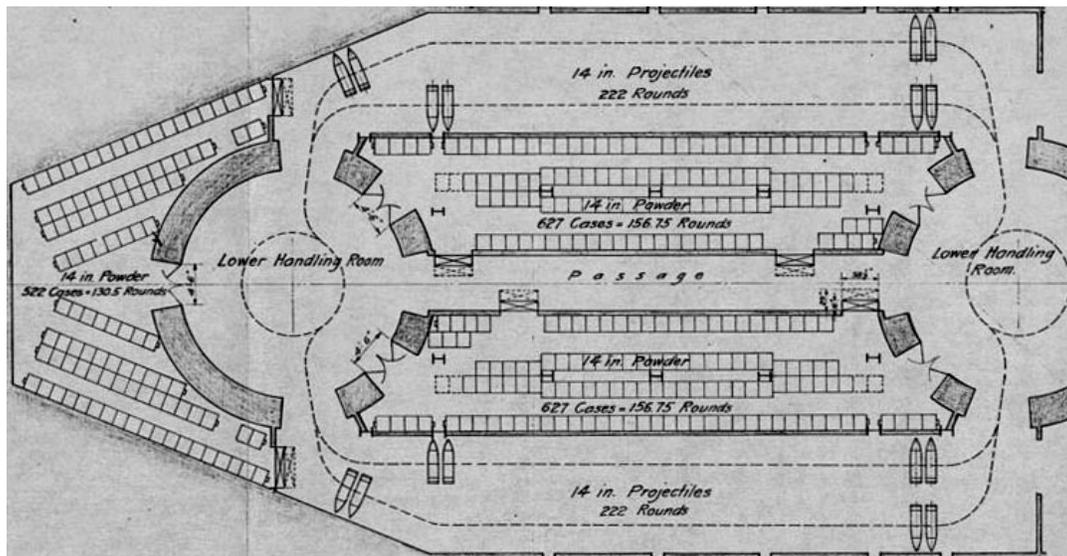
The normal complement of the US Army's 59th Coastal Artillery, 3rd Battalion stationed on Fort Drum were expanded when thirteen US Marines, four Filipino scouts and a few civilian ordinance experts joined them to help defend the fort. During the peak of its defense, 240 men were crowded into the interior.

On December 29, 1941, the first of many bombing attacks were aimed at Corregidor, the largest of the four islands. In early January of 1942, the first air raid aimed specifically at Fort Drum was made by Japanese aircraft. Damage from that attack was insignificant and there were no casualties.

A month later, Imperial Japanese Army artillery was moved into positions on the nearby Cavite peninsula and commenced to bombard the concrete battleship. Fort Drum's much larger guns responded and drove the enemy back. More attacks during March resulted in damage to the fort's cage mast and some inconsequential chipping away of a few inches of concrete.

**A QUIRK OF NATURE:** In early May, after capturing Bataan, Japanese troops attempted to invade Corregidor using amphibious landing barges. In response, Fort Drum's big guns fired over a hundred rounds of 14-inch shells at enemy positions on Bataan and their barges filled with troops.

This was only possible because of an unusual condition experienced with the fort's stores of gun powder. Early in the fighting, Fort Drum's exhaust fans were rendered inoperable. As a result, heat generated by the fort's diesel generators and the repeated firing of the 14-inch guns raised the temperature in the gun powder and shell magazine, shown below, to well over one hundred degrees.



That condition actually turned out to be a huge benefit. When using the overheated gun powder, there was a resultant increase in muzzle velocity, resulting in a greater range for the 14-inch guns than their nominal 19,200 yards.

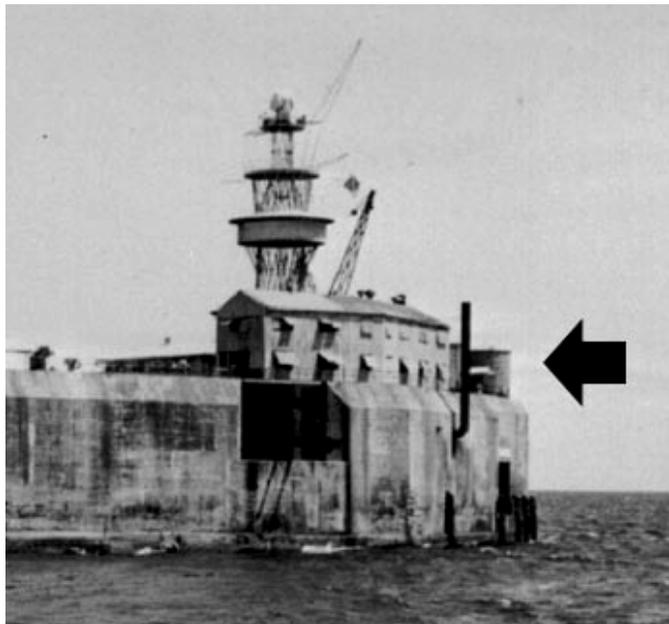
The enemy positions on Bataan were well over 20,000 yards from the concrete battleship. But the increase in range provided by the overheated gun powder allowed the fort's gunners to hit those positions repeatedly. Over one hundred rounds of 14-inch ordinance was expended, helping to blunt several attacks on Corregidor, sinking several barges and killing over 3,000 enemy soldiers.

**NECESSITY; THE MOTHER OF INVENTION:** Once Japanese forces had encircled the harbor defensive positions in Manila Bay, replenishment of ammunition, fuel, food and water became almost impossible for Fort Drum. Periodically, but only under cover of total darkness, small boats could be sent out from Corregidor for that purpose. More often than not, these attempts either failed or were inadequate for the needs of the fort's occupants.

Typical of what has to be done under siege-like conditions, the first step was to reduce the number and size of meals to stretch out the food supplies on hand. Fortunately, down in the bowels of the concrete battleship was an extra supply of food kept there in peacetime in case of prolonged bad weather. Called the 'Typhoon Ration', it consisted of thirty days of meals for 200 men.

Forced to further innovate, the men on Fort Drum came up with some interesting, if not downright ingenious solutions. Fresh water was one of their major concerns. Although there was a small evaporator and metal water tanks in the bowels of the concrete battleship, these had proven insufficient before the war for the normal needs of the fort.

During the 1920s, two large tanks of wooden stave/iron hoop construction had been erected on the fort's top deck, near the concrete battleship's 'stern' [one of which is denoted by the arrow on this illustration]. Before the Japanese first attacked, the soldiers assigned to the fort dismantled one of the tanks and reassembled it in the engine room. The other tank, apparently, was either pushed over the side or later destroyed by enemy fire.



When the supply of water became uncertain as the enemy attempted to deny replenishment, someone had the bright idea to increase the fort's water storage capacity by utilizing empty 14-inch gun powder cans. During peacetime, following use, empty cans were sent ashore for refilling with gun powder. When that was no longer possible, the soldiers on Fort Drum used the empty cans to store extra fresh water when it became available. Several hundred of the power cans were thus employed, each holding roughly fifty gallons.

Even the supply of American flags was exhausted during the siege, as enemy fire shredded or set afire any flag flying over the fort. The stars and stripes were hand painted on a sheet metal and hoisted as an improvised substitute.

The bay's defensive positions were connected by submarine telephone cables, but were occasionally were damaged and rendered inoperable by the tons of ordinance fired at or dropped on the forts. Short wave radio and signal lights were useful substitutes, but subject to being intercepted by the enemy.

Once again some ingenious someone solved that problem. A signal lamp was placed in the breech of one of the 6-inch casemated rifles on the side of Fort Drum facing Corregidor. Then the gun was aimed at the larger island's signal receiving station and messages were sent that could not be intercepted.

**FINAL DAYS OF THE DEFENSE:** After repeated attempts to storm Corregidor on the night of May 5, 1942, Japanese forces finally managed to gain a foothold on that fortified island the following morning, despite heavy losses. As hundreds of Japanese infantry were being moved by barge from Bataan, Corregidor's commanding officer ordered Fort Drum to take them under fire.

When told that dense smoke and dust were obscuring the enemy, that officer replied: *"Just fire anywhere in that smoke, anywhere between us and Bataan; you can't miss them"*. Both of Fort Drum's 14-inch gun turrets started firing, and were told that barges were being hit...and to keep it up.

They did so, until 1140 hours. By, that time enough Japanese were able to get ashore on Corregidor and were attacking last-ditch defense positions and also closing on the island's wounded, lying helpless in an underground, makeshift hospital. Reluctantly, General Wainwright gave the order for all American forces in the Manila Bay area to surrender by noon to prevent total annihilation.

When informed of that order, the garrison of Fort Drum wanted to fight on, since their heavily armored turrets remained undamaged. Orders, however distasteful, nevertheless had to followed.

Before surrendering, Fort Drum's defenders rendered all their weapons inoperable. They also destroyed the guns' fire control equipment, the electrical generators, and introduced sea water into the power and shell room magazines.



At exactly noon that day the makeshift American flag was lowered at Fort Drum. In spite of being hit over one thousand times, the fort's garrison had suffered only five wounded and no deaths in those early months of 1942.

Of the 240 men taken into captivity that day, only twenty-eight are known to have survived the war...

The concrete battleship's 14-inch guns were never out of action and were still firing at Japanese positions on Bataan until five minutes before time to surrender. They were the last large bore guns on the four fortified islands that could do so.

One of the 6-inch gun's barrel was hit twice, denting it badly enough that it could not be fired afterwards. The anti-aircraft weapons kept enemy dive bombers from making many low altitude attacks. High level bombing of the fort was ineffective. Only two of the hundreds of bombs dropped actually hit the fort, and they did no damage. On the very last day of the siege, a Japanese dive bomber was shot down in fitting climax; the only anti-aircraft victory scored by the fort's defenders.

The fort lost several feet of concrete in places, largely due to repeated direct hits made by Japanese artillery shells. But the interior spaces were never breached by enemy fire. As a result, Fort Drum remained fully functional, thus denying entry to the harbor by enemy warships for over five months.

**LIBERATING FORT DRUM:** The Japanese subsequently occupied the fort, but never were able to repair the massive damage to its weaponry inflicted by the installation's American defenders. In October of 1944, HIJN MUSASHI, one of two super battleships that had been built by the Japanese, was sunk near the Philippines by swarms of carrier-based American aircraft.

Some of her survivors were sent to the Manila Bay area to augment forces there anticipating an Allied attack. Somewhat ironically, sixty-five of the battleship MUSASHI's crew were assigned to the concrete battleship. But they only had hand-held weapons to defend their newly acquired 'battleship'.

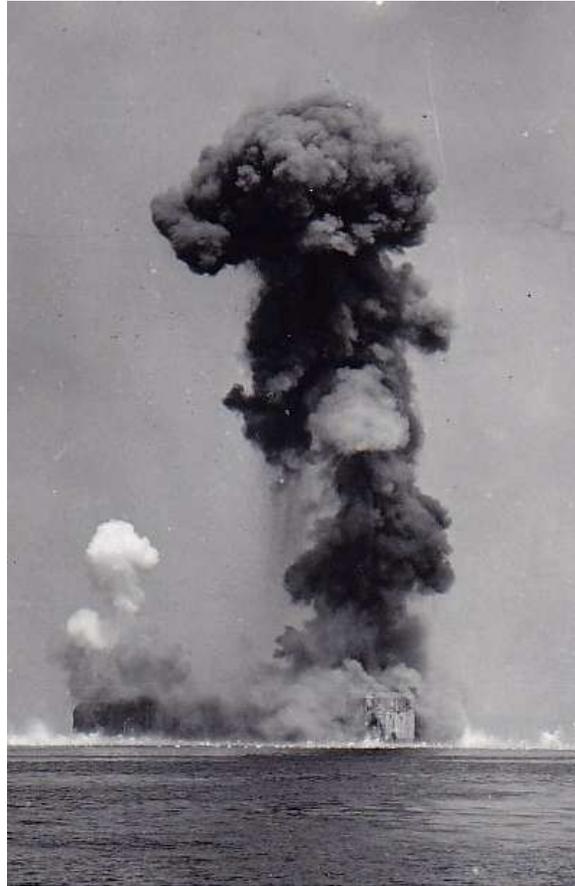
When American forces returned to liberate the Philippines, Fort Drum came under attack again. It proved to be almost as invulnerable to American ordinance as to Japanese weapons. The last of the four islands to be recaptured, its catacomb-like substructure provided strong defense positions for the fanatical Japanese stationed there who refused to surrender. As a result, terrible tactics were necessary.

An American landing craft, fitted with a ramp that could reach the top deck of Fort Drum deployed a platoon of riflemen who secured that battle-scarred deck [shown on the right] while a second platoon of demolition experts dropped explosive charges and poured oil into ventilation openings. The Japanese were given one last chance to surrender.

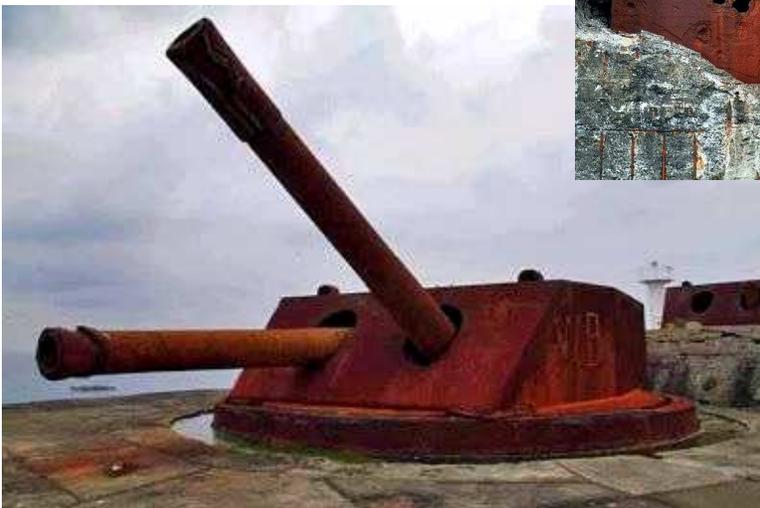


Still, the Japanese sailors hiding below refused to come out and surrender. The Americans then blocked the accesses to the interior of the fort and withdrew to their landing craft. After moving a safe distance from the fort, the explosive charges were remotely detonated. This huge blast resulted, followed by a raging fire that burned in the interiors of the concrete battleship for several days. There were no survivors amongst the sixty-five Japanese. War is hell...

But even that cataclysmic event could not completely destroy the concrete structure, nor its 14-inch gun turrets. The fort's interior spaces were damaged beyond repair, so no attempts were made to restore them. Modern advances in warfare had made such means of protecting harbors obsolete. Instead, its only useful purpose today is to support a navigational beacon.



**SILENT SENTINEL:** In the 1970s, scrap metal was removed from inside the installation, but the large caliber guns were too heavy and difficult to remove. Attempts to do so have left one of the long barrels oddly askew.



Left to the whims of Mother Nature and Father Neptune, Fort Drum has stubbornly endured as a silent sentinel at the entrance to Manila Bay for the past several decades.

Now, the only human visitors to visit Fort Drum and cautiously enter via its battered and weather-worn sally ports are curiosity seekers and the occasional historian.

Passengers and crews on passing vessels are frequently puzzled by the sight of that abandoned and long defenseless installation. Few know, or can even guess that it once was the only 'unsinkable' concrete battleship in the world.

Fort Drum is both unique and historic, and therefore its story needs telling from time to time. So I just did...

*Bill Lee*

June 2016

