

National Park Service  
U.S. Department of the Interior

Dry Tortugas National Park  
Florida



# Fort Jefferson

## *Self-Guided Tour*



Seth Eastman, 1875

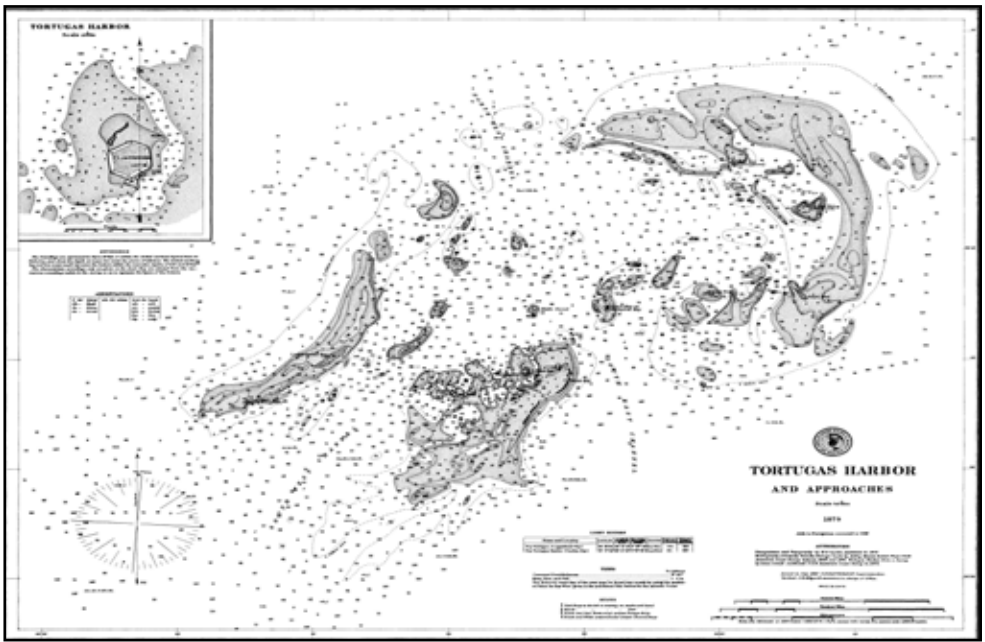


Chart of the Dry Tortugas

## Background

The story of Fort Jefferson lies with the maritime history of the Florida Straits and the excellent harborage afforded by the Dry Tortugas. These two geographic features stand at a nexus of currents, winds, and shipping routes. The Dry Tortugas rest at the western extremity of the massive Florida Reef system, the third largest coral barrier reef in the world. To the south lies the island nation of Cuba. Between the two lies the 106-mile bottleneck of the Florida Straits, through which flows the Florida Current. The shallow waters of the Dry Tortugas represent a strategic refuge for ships transiting these searoutes between the Gulf of Mexico and the Atlantic.

It was in 1513 that Don Juan Ponce de Leon discovered the islands of the Dry Tortugas and the Florida Current. The Florida Current is known as the Gulf Current after it merges with the Antilles Current near Cape Hatteras, North Carolina. For mariners in the Gulf of Mexico and the Florida Straights, this 2-to -4 knot current was highly prized for the added speed it provided their vessels. This was especially true for Spanish vessels carrying riches from the New World back to Spain. As maritime traffic increased along this current, the anchorage of the Dry Tortugas became vital as a haven for ships in times of inclement weather and war.

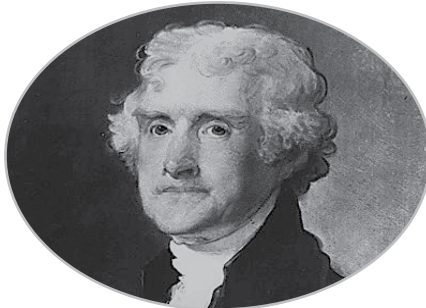
After the Louisiana Purchase in 1803, American merchants from the Mississippi River began frequenting the Dry Tortugas harbor. By the time Florida was acquired by the United States in 1821, military strategists of the young nation were already formulating ideas on how to secure this vital anchorage for American interests.

# Homeland Defense

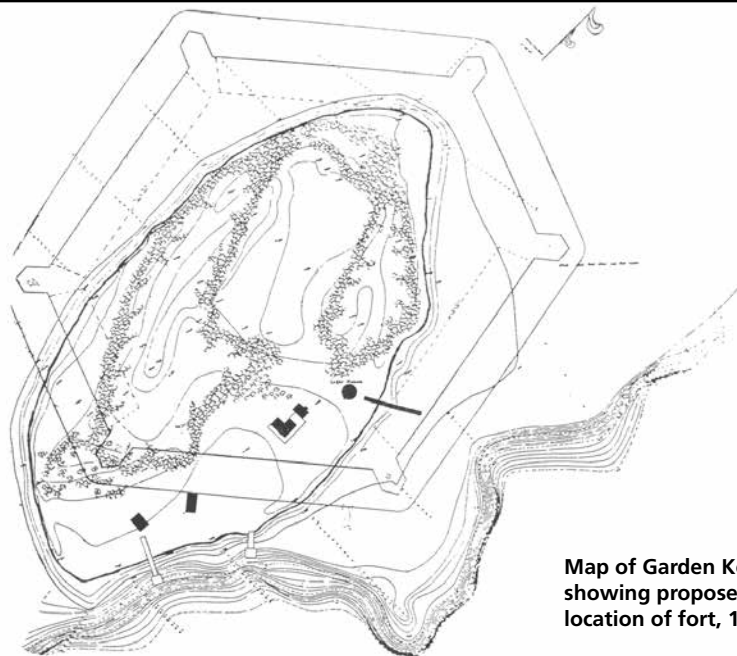
*“Of themselves (forts) they can never exert an influence dangerous to public liberty; but as the means of preserving peace, and as obstacles to an invader, their influence and power are immense.”*  
- Lieutenant Henry W. Halleck *“Report on the Means of National Defense 1843”*

Throughout the 19th Century, the United States sought to defend its vast maritime frontier and flourishing merchant trade. Still in its infancy as a nation, the United States did not have the means to construct a vast navy to rival those of Europe. These factors, combined with the financial desire to maintain a small, affordable military, influenced strategic thinkers to focus on a defensive strategy based largely around coastal forts. This culture of coastal forts flourished until after World War II and the advent of aircraft, missiles, and easily deployed amphibious assault tactics. Fort Jefferson stands today as a superb example of this earlier national strategy and has seen little change in its original appearance over time.

Named for President Thomas Jefferson, the walls of Fort Jefferson encompass 10 acres of the 16-acre Garden Key. The third-largest seacoast fortification the United States ever built, it served along with Fort Zachary Taylor and the East and West Martello towers in Key West to secure the Florida Reef in the 19th Century for American interests. Fort Jefferson was specifically constructed to defend the strategic harbor located in the Dry Tortugas. Situated at the northern entrance to the Florida Straits, any naval force in possession of the Dry Tortugas would have a base of operations from which ships could be sent out to harass commerce or Gulf coastal cities. Fort Jefferson was constructed to control this point because the United States lacked the naval force to protect the harbor. The fort's immense size reflects this mission; the fort would undeniably stand alone in the event of a naval assault. Therefore, Fort Jefferson was designed to hold enough artillery, men, and supplies for a year-long naval siege.

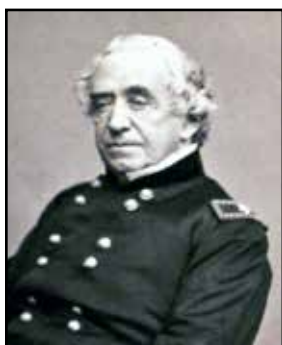


President Thomas Jefferson  
1801-1809



**Map of Garden Key,  
showing proposed  
location of fort, 1845.**

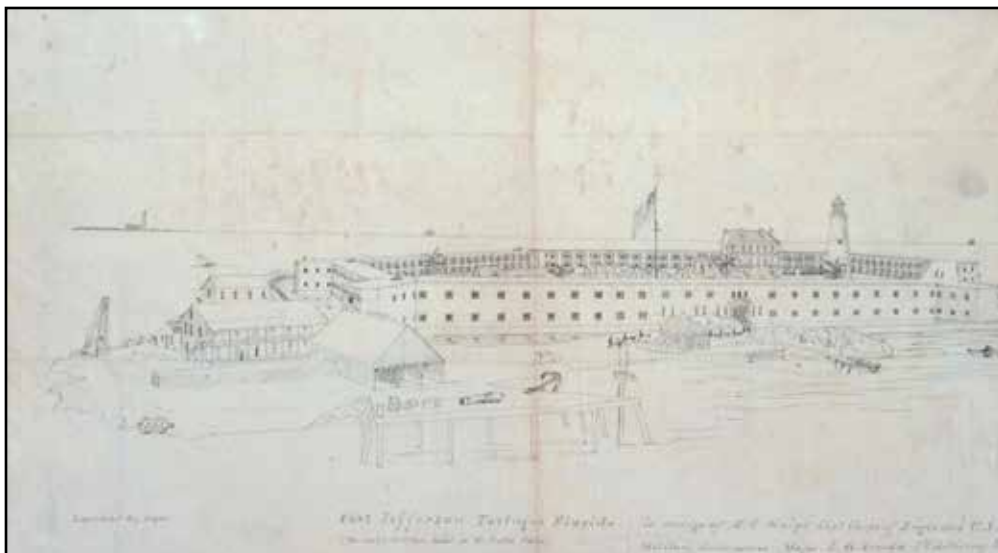
## Design and Construction



**General Joseph Totten,  
Chief of the Army Corps of  
Engineers, 1838-1864**

Fort Jefferson was designed by General Joseph Totten, who served as Chief of the Army Corps of Engineers from 1838 until his death in 1864. The fort is hexagonal (six-sided) with three levels, or tiers, for artillery. Constructed mostly of poured concrete, the facade of the fort is composed of over 16 million bricks. The fort was under construction from 1846 until 1889, but was never completed because of structural issues, the growth of the United States Navy, technological advances in warship design (specifically steam propulsion), and the advent of large ship-borne rifled artillery that advanced beyond the defensive capabilities of Fort Jefferson's architecture.

The fort's remote location, the extreme summer heat, disease and hurricanes all hindered construction. Materials for construction of the fort came from as far away as Maine, and as close as Pensacola, Florida. The only local materials were sea water, sand, and coral. Coral for the concrete was mined from nearby Bush Key by slave labor. Typically, local slaves from Key West composed 20% of the workforce while most hired labor came from the north in the form of Irish immigrants. This civilian workforce was overseen by officers from the Army Corps of Engineers.



Drawing by an unknown soldier, 1861, Museum of Fine Arts, Boston, Massachusetts

## The Civil War

As was the case for most US seacoast forts, Fort Jefferson never saw active combat. The closest threat the fort ever faced occurred around January 19, 1861. Nine days prior, on January 10, Florida had seceded from the Union. Fully realizing the strategic location of Fort Jefferson, the state of Florida wished to seize the incomplete structure in order to prevent its use by the Union Navy as a base of operations. On January 18, the first Union soldiers arrived at the fort, Company C, 2nd US Artillery, 66 men strong, under the command of Major Lewis Arnold.



Major Lewis Arnold

The next day, January 19, an armed schooner for the state of Florida arrived at the fort and demanded its surrender. Major Arnold instructed the vessel to leave immediately or it would be destroyed. The schooner quickly left Fort Jefferson behind, unaware the artillerists had arrived, but without their artillery. In fact, there was not a single mounted cannon in the entire fort. It would not be until January 25, that the first cannon would be mounted in Fort Jefferson. Six 8-inch columbiads were rushed from nearby Fort Zachary Taylor in Key West. This number would swell to 175 cannon by 1866.

*‘Blockading of the 3,500 mile Southern coastline was a vital strategic move by the Union’*

Fort Jefferson and the Dry Tortugas went on to play a significant role in the Civil War as a base of operations for the US Navy’s blockading force. Known as the “Anaconda Plan,” the blockading of the 3,500 mile Southern coastline was a vital strategic move by the Union to cripple the Southern war effort. The blockade, proclaimed by President Lincoln on April 19, 1861, was designed to deprive the South of materials that could support their war effort.



Location of a few Third System Forts

The East Gulf Blockading Squadron was formed on February 20, 1862. Based in Key West, Florida, the ships operated from the harbors in Key West and the Dry Tortugas, and had an operational area stretching from Cape Canaveral to Pensacola. This squadron was responsible for the capture of more than 300 blockade runners, a significant blow to the Southern war effort.

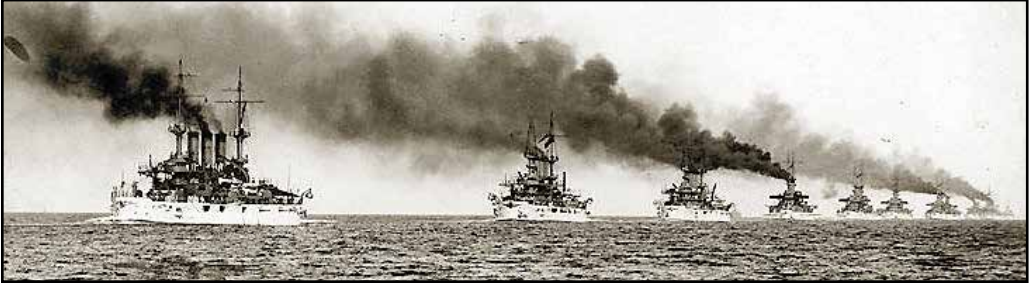


Dr. Mudd at Fort Jefferson

During the war, the fort also served an important function as a federal prison. The prison was established to house Union soldiers whose crimes had not brought the death penalty. Most were housed on the second tier of Front 3 near the sallyport. The most famous prisoner to reside here was Dr. Samuel Mudd. He was one of the four conspirators sentenced to life imprisonment for their participation in the assassination of President Lincoln. Mudd resided in the fort until 1869, when he was pardoned by President Andrew Johnson.



# The End of an Era



US fleet (ca 1907)  
required frequent re-  
fueling



USS Maine, Navsource.org

After the Civil War, the fort was modernized. In 1873, magazines were made stronger and larger cannon were installed, including the six 15-inch Rodmans and four 10-inch Parrott rifles that are located around the top of the fort today. However, by 1875, storm damages and illness among the workers had increased the cost of the project. The United States now had a stronger Navy and the old European powers were beginning to lose control of their colonial possessions in Central and South America. Fort Jefferson was no longer the lynchpin of national defense in the Gulf of Mexico.

However, the military days for the Dry Tortugas were not over yet. The larger American Navy required supply depots to keep its fleet on the high seas. One by one, as former colonies in the Americas cast off their European ties, the United States found new reasons to maintain an effective naval force in Caribbean waters.

In January 1898, the USS Maine sailed from the Dry Tortugas to Havana, Cuba. While in the Havana harbor, on the night of February 15, 1898, it exploded and sank. The cause was never determined, but it is still considered a major cause of the Spanish American war. As a result of these events, construction began on two massive coaling warehouses and piers to resupply US naval ships in the area. Additionally, a 60,000 gallon-per-day distilling plant was constructed to provide freshwater for the ships' massive boilers.

A massive hurricane damaged the facilities in 1910. Two years later, in 1912, the navy left, ending the military presence at the Dry Tortugas.



Front 3 with sallyport, below lean-to structure, lighthouse keepers house, and 2nd tier casemates converted to housing. (ca. late 1860s)

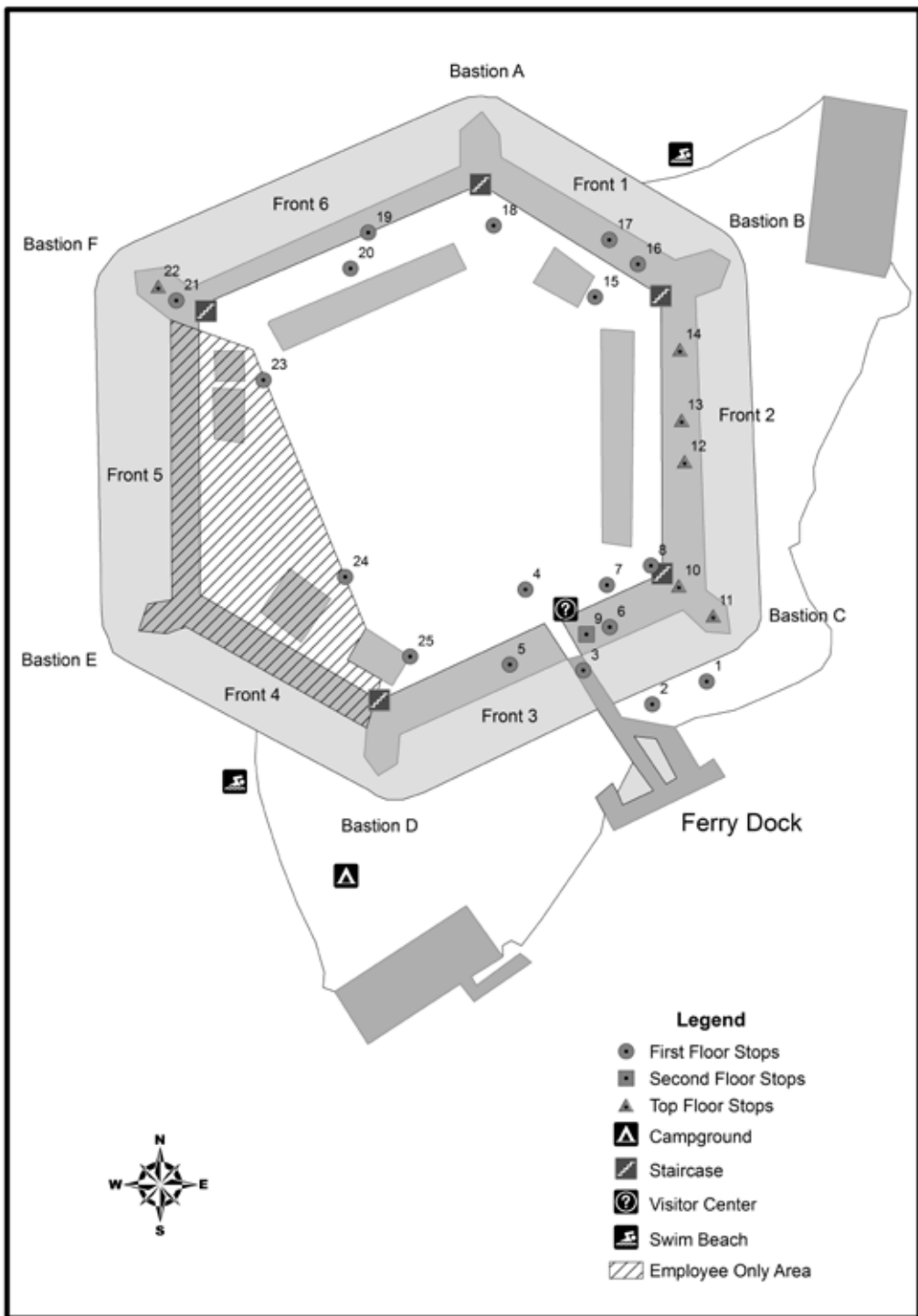
## Life in the Dry Tortugas

The Dry Tortugas have witnessed regular habitation since the first lighthouse was constructed on Garden Key in 1826. With the arrival of the US Army in 1846, the population of the remote cluster of islands began to swell. By the end of the American Civil War, the population of Garden Key increased to almost 2,000, including soldiers, laborers, slaves, women, children, and members of the lighthouse board.

Fresh water and food were always in short supply, resulting in understandably low morale among many of the soldiers. Soldiers wore hot, heavy, blue wool uniforms. Food was often rotten and lack of fresh vegetables made diseases, like scurvy, prevalent. A faulty sewer design led to the moat acting as a 70-foot-wide open sewer surrounding the fort. While these conditions were poor, one must keep in mind they were similar to what was found on the battlefields of the era, except of course, there was no one shooting at you at Fort Jefferson!

Today park staff live in the fort, just like the soldiers during the fort's military era. Rangers and support staff live in air-conditioned apartments with television and internet supplied by satellite systems. Electricity is supplied to the fort by generators. Fresh drinking water still comes from rain, and is supplemented by fresh water generated from saltwater in a process known as reverse osmosis.





Follow the numbered tour route on the map

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## Touring the Fort

The fort has undergone very few changes since its original construction, and in many ways, is as it was when the last soldiers marched out of its sallyport. Visitors today can walk around the fort, feel the heat of the sun, salt of the sea, and humidity of the air, and with a little imagination feel what it was like to be at this isolated post 150 years ago.



1. **Tower Bastion.** Fort Jefferson has six of these defensive structures, one at each of its corners. Originally armed with as many as twelve 24-pounder flank defense howitzers, these positions enabled defenders inside the fort to fire down the length of the adjoining walls and moat, protecting the fort from amphibious assault.



2. **Moat.** The 70-foot-wide moat that encircles Fort Jefferson served a variety of roles. The main function of the moat was to serve as a barrier to would-be attackers attempting to gain access to the fort. The moat wall, or counterscarp, was also intended to protect the fort from wave action and storm surge by serving as a breakwater. Finally, the moat served as an integral component of the fort's tidal flushing sewer system.



3. **Sallyport.** The only entrance to the fort, the sallyport, was originally secured with a massive drawbridge and two sets of heavy doors. Attackers that broke through the drawbridge and outer door would find themselves trapped inside the room by a second door. Small windows, known as loopholes, along the sides of the walls allowed defenders to fire into the sallyport from the safety of the adjacent guardrooms. The large granite rails along the floor served as guard rails to keep the wheels of carriages straight as they were being pulled through by mules.



4. **Parade Ground.** Eight acres of open ground inside Fort Jefferson provided space for three housing structures and an area for men to be trained in marching and battle techniques. The fort was never completed, but the parade ground served as an extensive work yard for more than 40 years.



5. **Casemates.** Most of Fort Jefferson consists of gunrooms known as casemates. This honeycomb of masonry arches served as the backbone of the fort and allowed it to be constructed with 45-foot-tall walls. It also enabled the impressive firepower of 420 large cannon to be planned. The fort was never completed and many of these casemates never received the armament they had been planned for. Instead, many on the second tier became homes to soldiers and prisoners.



6. **Cistern System.** The fort was designed to hold 1.5 million gallons of water in 110 cisterns, 109 of which were constructed under the first tier casemates. Rainwater collected along the top of the fort would be piped down the columns of the casemates into the reservoirs beneath. Lack of annual rainfall, the inherently salty nature of the sand the water trickled through, and saltwater intrusion from the settling of the fort, made most of the cisterns unserviceable. During the Civil War, steam powered salt water condensing plants were brought to Fort Jefferson to produce freshwater for the garrison.

*It would have been a sorry report to send to Washington of fourteen hundred people on a short allowance of water, with smallpox in their midst, confined on that island and a few barren keys at the beginning of summer.*

*- Emily Holder, 1862*



7. **Lighthouse Foundation.** The United States acquired Florida and the Keys from Spain in 1821. In an effort to prevent the sinking of sailing vessels on the shallow reefs of the Dry Tortugas, it was decided a lighthouse should be built. The first lighthouse constructed in the Dry Tortugas was on Garden Key in 1826. Made of brick and mortar, it stood 70 feet tall. A house was also built for the caretaker of the lighthouse. These were the first permanent structures built in the Dry Tortugas. The 1826 lighthouse served until 1875 when damage from a hurricane required its removal. Today all that remains of this structure is a low brick and concrete foundation.



*We are still in irons, compelled to wash down six bastions of the Fort daily, closely guarded, denied all intercourse with other prisoners, locked up at night, and a sentry placed at the door.*

*- Dr. Samuel Mudd, 1865*

8. **Spiral Staircase.** Each bastion contains a granite spiral staircase that allows access to all three tiers. Visitors can use five of the staircases to explore the fort. The granite was shipped from Vermont and came pre-cut and ready for assembly. Staircase construction had defensive elements as did most everything associated with the fort. The steps narrow from the outside to the inside of the spiral to limit the number of would-be attackers that could ascend the stairs at one time. Even the clockwise spiral of the steps was designed to give defenders above greater reach and movement with their weapons.



*Imagine one loaded down with heavy chains, locked up in a wet damp room... The atmosphere we breathe is highly impregnated with sulphuric hydrogen gas...*

*- Dr. Samuel Mudd, 1865*

9. **Dr. Mudd's Cell (Second Level).** Dr. Samuel Mudd was imprisoned at Fort Jefferson from July 24, 1865 until March 8, 1869. Mudd lived in several areas of the fort throughout his sentence. From late January 1866 until his release, he resided in this case-mate above the sallyport. Dr. Mudd described the room in some detail in letters home. The small canals cut into the floor were done by Mudd to divert rainwater from his bed. Located on the first floor in Bastion D is a cell area rumored to have been Mudd's dungeon after his attempted escape. There is no proof this was the actual location, but a visit to this small confined room on a hot day will demonstrate the conditions Mudd so vividly wrote home about.



10. **Harbor Light (Third Level).** Constructed in 1876, this boilerplate iron harbor light was built to replace the 1826 light that had been damaged by hurricanes. Iron was used in its construction instead of brick because military thinkers felt there would be less of a threat from shrapnel if it was impacted with artillery fire. Though no longer an official navigational aid, the National Park Service continues to operate the electric light every night as a harbor light.



11. **North and South Coaling Docks.** In 1898, massive coaling warehouses and docks were constructed at the fort. Although Fort Jefferson itself was no longer being used as a defensive fortification, the harbor was still ideal for naval vessels and the United States had an interest in the area as a supply depot. Massive warehouses and docks were constructed to house coal for the battleships of the era. A large 60,000 gallon per day distilling plant was also constructed to provide freshwater for the ships' massive boilers.



12. **10-inch Parrott Rifle.** The largest of the Parrott family of rifles, the 10-inch rifle weighed approximately 27,000 pounds and could fire a 300-pound projectile. Because of the higher internal pressures associated with firing a rifled projectile, Parrotts had a wrought iron band shrunk over the breach to reinforce the gun tube. The 10-inch Parrotts were notorious for bursting and because of that, only around 40 were made, 4 of which remain at Fort Jefferson.



13. **Traverse Magazine.** The 16 large mounds along the top of Fort Jefferson are known as traverse magazines. The traverse magazines were designed to be defensive barriers (traverses). They were also used to safely store ammunition for guns on the top level. Guns on the top level were on platforms so they could fire over the parapet. When mounted this way, they had wide fields of fire but they were vulnerable to enemy fire, especially from the side.





14. **Soldier Barracks Foundation.** The foundation below you on the parade ground is all that remains of the Soldiers Barracks. The proposed 1,500-man garrison was to be housed in three large three-story structures on the Parade Ground. The 1,000 enlisted men of the garrison were to live in the Soldiers Barracks. The massive structure was more than 338 feet long and 35 feet wide. Its roof extended higher than the parapet of the surrounding fort walls. Foundations for the enlisted men's barracks were laid in 1862 and construction continued until 1874 without completion. The building was regularly damaged by hurricanes, necessitating nearly continuous reconstruction. The brick ruins located between the foundation and the casemates of Fort Jefferson are the remains of the 10 detached kitchens and privies. What remained of the building was removed in 1962 because of safety concerns for park visitors.



15. **Large Parade Magazine (First Level).** This large powder magazine was under construction from 1862 to 1866 but was never finished nor used. This magazine is 71 feet long and 52 feet wide. The fort was originally designed for five parade magazines, two large powder magazines, and three smaller styles. These parade magazines were part of an elaborate munitions infrastructure that included four curtain wall magazines, 12 bastion magazines, and 16 traverse magazines. This magazine is one of only two of the planned five parade magazines started. It was never completed because its architectural style became vulnerable to new types of artillery and projectiles. Instead, the majority of munitions were stored in the curtain, bastion, and traverse magazines.



16. **Cuban “Chug.”** In recent years, the Dry Tortugas have become a popular target for Cuban migrants. Under current United States policy, Cuban migrants seeking to escape Cuba must have one “dry foot” on American soil to stay in the country, claim certain benefits, and pursue citizenship. Those intercepted at sea, or found “wet foot” are transported back to Cuba. Many of these immigrants make the treacherous 106-mile journey in small homemade boats similar to this one. Commonly known as “chugs”, they received this name for the “chug chug chug” sound made by many of the early types of engines used to power the vessels.



17. **Totten Shutters.** Specialized iron shutters were used to protect the gun crews from enemy fire during the reloading of the artillery. These hinged, wrought-iron shutters were placed between the mortar core of the fort and the brick façade. A great achievement for their day, they were widely employed in forts like Fort Jefferson. These shutters were known as “Totten shutters,” after their designer, General Joseph Totten. During use, the shutters were unlocked from the bronze strike plate located on the bottom sill of the embrasure. Upon firing the cannon, gases escaping from the muzzle the moment before the shot would momentarily throw the shutters open. The shutters were carefully balanced so that they would swing freely and ‘rebound’ into the closed position where the pins would drop down into the strike plate securing them closed. Today these shutters have caused significant damage to the masonry walls of Fort Jefferson as they have rusted and deteriorated over the years. The example in front of you is a cast concrete replica of the original.



18. **Hot Shot Furnace.** The hot shot furnace was prevalent in an era before the invention of artillery shells that could explode. In an effort to make the solid iron cannonballs of the time more effective against wooden warships, they would be superheated in a hot shot furnace. A hot fire would be built in the lower end of the furnace. The cannon balls would be loaded in the opening at the front and gravity would feed them down iron rails to the lower opening at the rear. The fire would heat the cannon balls until they were cherry red with heat. Gun crews from the nearby artillery would use large tongs to take the red hot cannon balls from the hot shot furnace to their guns. An extra measure of damp wadding would be placed in the cannon barrel to prevent the hot projectile from prematurely igniting the black powder. The heated cannon ball was fired so it would skip across the surface of the water like a stone so it would impact a ship near the waterline to effect the maximum amount of damage.



19. **Curtain Wall Magazine.** This large curtain magazine was designed for a normal capacity of 860 barrels of gunpowder, or 43 tons. The term “curtain” refers to the magazine’s location within a curtain, or main wall of the fort. Fort Jefferson featured four curtain magazines, one along each long front. They were the largest magazines in use at the fort.



20. **Officers' Quarters and Kitchens Foundations.** The Officers' Quarters was the first permanent building erected on the site by the Army. Construction of the planned 286 by 44-foot structure began in 1850 with a 69-foot section intended to house the engineering officers and their offices. By the end of 1850, the section was completed and occupied. The remainder of the massive structure saw construction continue until the late 1870s though it was never completed. Of the 68 planned rooms, no more than 36 were ever usable. The brick ruins located behind the officers' quarters foundation are all that remain of 12 two-story kitchens. What remained of the buildings was removed in 1962 because of safety concerns for park visitors.



21. **Bakery.** This bakery was the only permanent cooking facility designed within the actual structure of Fort Jefferson. Numerous other bakeries were constructed throughout the parade ground and outside the fort, but these were all temporary wooden structures. Designed in 1855, the walls of its large "bee hive" style ovens were built independently from the fort's walls. The quality of the food at the fort was often criticized by soldiers and prisoners alike. Convicted Lincoln assassination conspirator, Samuel Arnold, wrote home that "The bread was a mixture of flour, bugs, sticks and dirt."



22. **15-inch Rodman (Third Level).** The 15-inch Rodman had a firing range of over three miles, the distance from the fort to the lighthouse on Loggerhead Key. The Rodmans were smooth-bore, weighed 25 tons, and could fire 450-pound projectiles. Of the approximately 320 produced, Fort Jefferson possesses six. This Rodman was re-mounted on a reproduction carriage in 2010 as part of the park's 75th anniversary.



23. **Engineer's Quarters (First Level).** The Engineering Officers' Quarters building was originally known as the Commanding Officers' Quarters. The 50- foot by 43-foot structure consists of two buildings that are some of the earliest structures built at Fort Jefferson. Completed in 1855, this structure was originally designed to be a set of two-story kitchens that were to service a second large Officers' Quarters building. This was never constructed and the kitchen buildings were pressed into service as housing for the supervisory engineers to separate them from the soldiers and work crews. From 1939 to 1941, the remnants of the structures were restored and the central addition added by the Public Works Administration under the New Deal. Since 1941, these buildings have been continuously used by the National Park Service as housing.



24. **1852 Cistern.** This cistern is the oldest extant structure within the parade ground of Fort Jefferson. Not long after the initial construction crews began arriving in 1847, their wooden cisterns began to deteriorate in the harsh marine environment. It was decided a large permanent concrete cistern was needed. This cistern was constructed for collecting rainwater and to serve as the foundation for a proposed chapel and offices, neither of which were ever built. Retrofitted in modern times, this cistern is still in use for the National Park Service staff that live on the island. Its 90,000 gallon capacity is divided into three bays, two of which hold rain water, while the third is filled with fresh water made from sea water in a process known as reverse osmosis.



25. **Small Parade Magazine.** The original design of Fort Jefferson called for three small parade magazines as part of the fort's munitions infrastructure. This small magazine measures 53- feet long by 52- feet wide. Of the three planned, this was the only one commenced. Like the large parade magazine, this structure was never completed because developments in artillery made its design obsolete.



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