THE BATTLE OF HAMPTON ROADS

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The Battle of Hampton Roads, between the Confederate ship Virginia and the Union ship Monitor, spelled the end of the conventional warship and forced the navies of the world to rebuild their forces following the pattern set by the two revolutionary American designs.

When the American Civil War started in April 1861, the South or Confederate States had very few ships and the North or Union met with no resistance when it declared a naval blockade from Virginia to Texas with its ninety warships. The South could never hope to build enough conventional warships to challenge the North, so it decided to build one strong and powerful ship instead of many conventional designs. In order to save time and effort, the Confederates planned to raise a sunken ship and use it as a base for the new design. The sunken hulk was the Union ship, U.S.S. Merrimac.

The Merrimac was a powerful five-year-old 44-gun wooden frigate that was powered by sails as well as a steam engine that drove a propeller. When war was declared, the Confederates captured the Norfolk Naval Base where the Merrimac was based. The retreating Union forces burned the ship to the waterline to sink it so the South could not use it. The hull was raised one month later, and was placed in a drydock in the Norfolk Base where it was cut down to the berthing deck (one deck below the lowest gun deck). A new deck and an enormous sloping casemate or superstructure was then constructed atop the wooden hull to enclose the guns, ammunition and the gun crews. The casemate consisted of two feet of solid pine and oak lumber covered with two-in.-thick iron plates. The top of the casemate had access hatches and open gratings to provide ventilation for the gun crews. The sloping sides were coated with heavy grease so any enemy shells that struck the sloping sides would glance off more readily.

When afloat, the entire hull and part of the casemate were submerged and this made the ship very difficult to steer. Therefore, a wooden breakwater bulwark was added to the bow to improve speed and steering. A one-ton iron beak was installed on the bow, below the waterline, for the purpose of ramming the enemy. The planned speed was nine knots but it actually could attain only six or seven knots. This unusual ship required thirty minutes to turn a full circle. The spaces below decks were hot and stuffy and many of the 320 crew became sick when working for any length of time. Construction progressed through the autumn and winter of 1861-62 and on February 17, 1862 this ironclad ship was commissioned as the C.S.S. Virginia. (Naval constructor Lt. J. M. Brooke CSN is credited with the design of the Virginia.)

This unusual design was 275 ft. long and 38 ½ ft. wide. The keel extended 22 ft. below the waterline. Armament was two 7" shell guns fore and aft, two 6" shell guns and six 9" smooth bore guns inside the armored casemate. In addition, two 12-lb. howitzers were sometimes mounted atop the casemate. The displacement of the ship was 3200 tons. Later the deep draft of the Virginia was to hamper its operation in the shoals or sand bars of Hampton Roads.

When the Union Navy learned that the Confederates were building an iron-clad ship they moved quickly. A contract was awarded to famous Swedish engineer John Ericsson on October 4, 1861 to build an iron warship of his own design. Ericsson had designed the ship back in 1854, but until now nobody had been interested in his unusual idea. The hull was built by Continental Iron Works and the steam engines by Delamater and Co. The gun turret, which consisted of eight layers of one-in. thick iron plate, was built by Novelty Iron Works. Alt companies were in the New York City area. By contracting the work to three specialists, Ericsson’s warship took shape very quickly and was launched on January 30, 1862 and commissioned as the U.S.S. Monitor on February 25, 1862, only a few days after the Virginia!

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Above: View of the "Battle" with the author’s models maneuvering into position. This project is ideal for a school project—science, history or shop.

Right: This very inaccurate sketch was made in early 1861 showing the Virginia in drydock in the Norfolk Navy Yard. It is interesting only for its historical value.

Below Right: This unusual photograph of the Monitor shows the heavy rivets in the turret plus one of the smokestacks at the extreme left. Note the pilot house in the background. The design was changed from straight to sloping sides after the battle. The dents in the turret were caused by the cannon balls from the Virginia.

Below: Map of the Battle of Hampton Roads, March 8-9, 1862.
Ericsson's design was stark simplicity and consisted of a submerged hull atop which was fitted a second overhanging raft-like hull as protection against ramming. All but about one ft. of the raft was under water and contained the rotating turret with two powerful eleven-in. guns. It also contained the pilot house, smokestacks and ventilators. The smokestacks and ventilators were removable during a battle. One steam engine drove the propeller while another was used to rotate the gun turret. This was the first ship to employ a gun turret, ammunition elevators and ventilation blowers. It has been said that John Ericsson patented forty inventions that he used in the Monitor! Although this ship was much smaller than the Virginia the guns were larger. The innovation of the turret gave the two guns the effectiveness of eight or more because they could be fired in any direction, although they lacked the effectiveness of a six-gun broadside.

The Monitor was 172 ft. long, more than 100 ft. less than the Virginia. The beam or width was 41 ½ ft. and the draft (distance from the keel to the waterline) was only 11 ½ ft. Displacement was 987 tons and it only required a 47-man crew to operate this unusual ship.

At 11 a.m. on Saturday, March 8, 1862, the Virginia steamed out of Norfolk Naval Base to challenge the Union ships that were blocking the entrance to the James River-Hampton Roads. The ironclad was escorted by a few small gunboats and the entire operation was commanded by Flag Officer Franklin Buchanan. The Virginia headed for the two nearest Union ships: Cumberland (22 guns) and Congress (50 guns) off Newport News. The combined might of these two powerful ships plus the Union guns on the Northern shore could not stop the Confederate ship as their shells exploded harmlessly against the iron plates and the solid cannon balls glanced off the sloping casemate. With an enormous crash the Virginia then rammed the Cumberland and the iron beak opened a big hole in her side. As the ironclad backed away, the water rushed into the Cumberland's hull and the wooden ship sank in a few minutes killing 120 men. It was then discovered that the Virginia's iron ram had broken off.

Although water was slowly entering her own hull, the monster headed for the Congress. In order to take advantage of the wind and tide she steamed up the James River and then turned around to head downstream. On the way, she sank two more Union ships and captured a third. The Virginia then trained her guns on the Congress, firing tremendous broadsides and soon the powerful Union frigate was forced to surrender. As the Confederates approached the Congress to take care of the wounded, the Northern shore batteries opened fire on the Southern ships and seriously wounded Buchanan. In retaliation, the Virginia blew up the Congress.

In their panic to escape the wrath of the ironclad monster, the Northern frigates Roan and St. Lawrence, as well as the Union steam frigate Minnesota, ran aground on sandbars. With Lt. Gatesby Jones now in command, the Virginia tried to close in on the Minnesota, but due to the low tide and deep draft, she could not get closer than one mile and had to be satisfied with exchanging long-range shots. With a hole in her bow, a riddled funnel which reduced her power, several wounded men and two damaged guns, the Virginia was satisfied with the day's work—four ships sunk and one captured. With dusk approaching, she slowly steamed back and anchored off Sewell's Point for repairs. Lt. Jones planned to finish the job of sinking the remainder of the Northern blockaders in the morning. Little did he know that the U.S.S. Monitor had just arrived at the other end of Hampton Roads and was anchored in the shadow of the Minnesota.

At eight o'clock the next morning, Lt. Jones sailed the Virginia across Hampton Roads to administer the coup de grâce to the remaining Union frigates and then perhaps even sail up the Potomac River and bombard Washington itself! As the Confederate ironclad approached the Minnesota, the tiny Monitor, under the command of Lt. John L. Worden, moved to intercept her. The Virginia fired at both enemy ships simultaneously and, as she drew closer, the Monitor fired at close range, but the big guns merely loosened some of the armor plate. The Virginia then let loose a broadside, but the projectiles only dented the turret. The larger length and draft of the Southern warship was a great disadvantage and it was difficult to maneuver or even make headway with the keel dragging in the mud and sand most of the time. In fact, the Virginia once ran aground during the battle and it took fifteen minutes for it to free itself! At one time the Virginia rammed the Monitor, but the absence of the iron beak plus the overhanging raft on the Union ship rendered the maneuver useless. The Virginia continued to press the attack, but whenever the Monitor found itself in a difficult situation, she retreated to shallow waters where the larger Virginia could not follow.

During the engagement, the Virginia managed to score several hits on the Minnesota and even blew up a steamer alongside the Union frigate. After four hours of point-blank dueling, Lt. Jones aimed all guns at the Monitor's pilot house and a storm of shells burst against the lonely structure, blinding Lt. Worden. Again the Monitor left the battle for the safety of shallow water. With her stern twisted, two dead and nineteen wounded, a leaking hull, armor plate loosened, muzzles of two guns shot away, and a riddled smokestack which reduced engine power considerably, the Virginia turned and sailed to Norfolk thus ending the Battle of Hampton Roads. The Monitor did not follow!

There was no victor or loser and, although the Virginia failed to destroy the remainder of the Union blockaders, the Monitor also failed to sink the Virginia. After undergoing needed repairs, the Confederate ironclad made two more sorties into Hampton Roads, but the Monitor failed to challenge the Southern ship. Early in May 1862, General McClellan forced the Confederates to withdraw from Norfolk which left the Virginia without a base. An attempt to sail the ironclad up the James River to Richmond failed because of the shallow water. On May 11, the Virginia was set afire—it blew up and sunk for the second time in its career. The Monitor was then in control of Hampton Roads; in addition to performing blockade duty, it also bombarded the Confederate forces on shore to help the Union land actions. On December 24, the Monitor was order to Beaufort, North Carolina. She was towed by the Rhode Island and as the ships neared Cape Hatteras on midnight of December 31, a storm caused the iron warship to sink, taking four officers and twelve sailors down with her. The hull has never been found.

The designs of the Monitor and Virginia were considered so successful that the types were duplicated by both sides during the remainder of the war. From then on, the wooden, sail-powered warship was obsolete and the navies of the world copied the gun turret, the iron construction, steam power and even the ram for all of their principal warships for the next half century!