

## COASTAL MONITORS

### *Monitor* class (1) ; *Monitor*

The principle of the revolving turret equipped with heavy guns was, as John Ericsson himself was first to admit, an old one. However, it remained for Ericsson's engineering genius to give the principle practical application in the form of *Monitor*, the first turreted ironclad warship. The pioneering efforts of Ericsson in the United States and Captain Cowper Coles, R.N., in Great Britain would, after some 80 years of continuing development, culminate in the construction of USS *Missouri*, one of the most sophisticated battleships ever built.

At the time of her keel laying in October 1861 *Monitor* represented a complete break with traditional naval design. Instead of a standard ship hull *Monitor* had a large armored "raft" 172 feet by 41 feet 6 inches supported by a box-like iron hull 124 feet by 34 feet. The "raft" was designed to increase stability in a seaway thereby giving the guns a more stable platform for accurate fire and, also, to protect the hull structure proper from the effects of ramming. Numerous other technical advances were incorporated into *Monitor* including forced ventilation of living spaces, an armored pilothouse, and a protected anchor which could be raised without exposing any members of the crew to hostile fire. The contract price for *Monitor* was only \$275,000, a small investment for the creation of such an important weapons system.

It was with good reason that the London *Times* remarked, following receipt of news of the *Monitor-Virginia* engagement:

Whereas we had available for immediate purposes 149 first-class warships, we have now two, these two being the *Warrior* and her sister *Ironsides* [*sic, Black Prince*]. There is not now a ship in the English Navy, apart from these two, that it would not be madness to trust to an engagement with that little *Monitor*.

However, to put this observation in proper perspective, one must recall that Great Britain then had 13 other ironclads in some phase of construction and that the British ironclads were designed to fight in a seaway and could. Perhaps the single most serious fault of American monitors, and for that matter all monitors, was that they could not fight their main batteries in a seaway. The turret had to be combined with increased freeboard before it was generally accepted in the world's navies.

### Statistics:

Length overall: 172'  
 Extreme beam: 41'6"  
 Draft: 10'6"  
 Depth of hold: 11'4"  
 Designed speed: 9 knots  
 Displacement: 987 tons; 776 tons (old tonnage)<sup>1</sup>  
 Engines: 2 Ericsson vibrating lever engines  
 Horsepower: 320 indicated horsepower  
 Boilers: 2 Martin  
 Bunker capacity: 100 tons coal

<sup>1</sup> "Old tonnage" was derived from volume by various arbitrary formulas.

Screws: Single screw, 9' diameter  
 Complement: 49  
 Armament: 2 XI-inch Dahlgren smoothbores  
 Turret diameter: 20' inside  
 Armor: Turret, 8"; side 4½"

### *Monitor*:

Date of contract: 4 October 1861  
 Launched: 30 January 1862  
 Commissioned: 25 February 1862, Lt. John L. Worden  
 Builder:

Hull: Contract for ship awarded to John Ericsson; hull subcontracted to Continental Iron Works, Greenpoint, N.Y.

Machinery: Subcontracted to Delameter Iron Works, New York, N.Y.

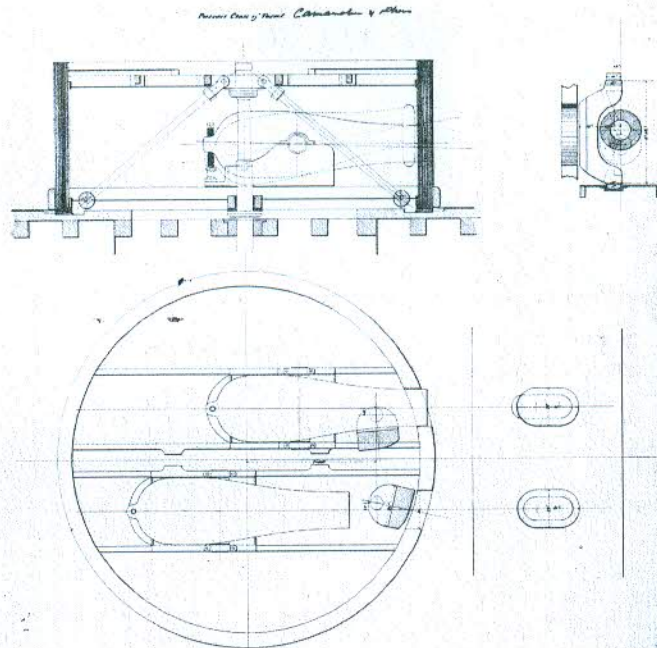
Service speed: 6 knots

*Passaic* class (10) ; *Camanche*, *Catskill*, *Lehigh*, *Montauk*, *Nahant*, *Nantucket*, *Passaic*, *Patapsco*, *Sangamon*, *Weehawken*.

The *Passaic* class were single-turreted monitors designed as enlarged versions of the original *Monitor*. As such they were larger in all basic dimensions and incorporated a number of significant improvements. Among these were the substitution of a XV-inch Dahlgren smoothbore for one of the XI-inch carried by *Monitor*, the installation of a permanent stack, a pilot house on top of the turret, permanent standing ventilators, and an increase in the thickness of the armor. Contracts for the *Passaic* class were let in the spring of 1862 and the ships, with the exception of *Camanche*, were launched between 30 August 1862 and 17 January 1863. The lead ship of the class, *Passaic*, was commissioned 5 November 1862 and the last, again with the exception of *Camanche*, 15 April 1863. *Camanche* was built at the Jersey City, N.J., yard of Joseph Coldwell by Donohue, Ryan, and Secor, shipped in pieces to San Francisco and there reassembled. She was launched 14 November 1864 and commissioned 24 May 1865. The contract price for each ship was \$400,000.

### Statistics:

Length overall: 200'  
 Extreme beam: 46'  
 Draft: 10'6"  
 Depth of hold: 12'6"  
 Designed speed: 7 knots  
 Displacement: 1,875 tons; 844 tons (old tonnage)  
 Engines: 2 Ericsson vibrating lever engines  
 Horsepower: 320 indicated horsepower  
 Boilers: 2 Martin  
 Bunker capacity: 150 tons coal (approx.)  
 Screws: Single screw, 12' diameter  
 Complement: 75 (approx.)  
 Armament: 1 XV-inch and 1 XI-inch Dahlgren smoothbore; *Camanche*, 2 XV-inch Dahlgren smoothbores; *Lehigh*, *Patapsco*, 1 XV-inch Dahlgren smoothbore, 1 150-pdr. Parrott rifle.  
 Turret diameter: 21' inside  
 Armor: Turret, 11"; side, 5"



Plan of turret for *Passaic* class monitors. The port stoppers can be seen clearly in this drawing.

**Camanche:**

Launched: 14 November 1864<sup>2</sup>  
 Commissioned: 24 May 1865, Lt. Comdr. Charles J. McDougal  
 Builder:  
 Hull: Donohue, Ryan and Secor of New York, N.Y., at the yard of Joseph Coldwell, Jersey City, N.J.<sup>3</sup>  
 Machinery: Secor & Co. of New York, N.Y. at the Fulton Foundry, Jersey City, N.J.  
 Service speed: 5 knots

**Catskill (15 June 1869 *Goliath*, 10 August 1869 *Catskill*):**

Launched: 6 December 1862  
 Commissioned: 24 February 1863, Comdr. George W. Rodgers  
 Builder:  
 Hull: Contract for ship awarded to John Ericsson, hull subcontracted to Continental Iron Works, Greenpoint, N.Y.  
 Machinery: Subcontracted to Delameter Iron Works, New York, N.Y.  
 Service speed: 4 knots

<sup>2</sup>The reasons for the delayed completion of *Camanche* were several. "The contractors were obliged to give portions of the material of the *Camanche* to aid in the construction of other iron-clads then building in New York, and required by the government for immediate use, as the rolling mills of the country were not of sufficient capacity to roll the kinds of iron required for that class of vessels as fast as it was wanted. When the *Camanche* was ready for shipment to San Francisco, the Government took the principal parts of her engines to replace parts of the engine of the *Weehawken*, which had broken down at Port Royal. The delay in replacing these parts of the machinery caused the *Camanche* to arrive in San Francisco in the winter (of 1863) instead of in the spring of that year." *Minutes of the Selfridge Board*.

*Aquila*, the ship which carried the disassembled *Camanche* around Cape Horn, sank at her pier in San Francisco on 16 November 1863, prior to being unloaded. The completion of *Camanche* was probably delayed for several months by the subsequent salvage operations.

<sup>3</sup>Peter Donohue and James F. Ryan were both from San Francisco, Calif.

**Lehigh:**

Launched: 17 January 1863  
 Commissioned: 15 April 1863, Comdr. John Guest  
 Builder:  
 Hull: Contract for ship awarded to John Ericsson, hull subcontracted to Reaney, Son & Archbold, Chester, Pa.  
 Machinery: Subcontracted to I. P. Morris, Towne & Co., Philadelphia, Pa.  
 Service speed: 4 knots

**Montauk:**

Launched: 9 October 1862  
 Commissioned: 17 December 1862, Comdr. John L. Worden  
 Builder:  
 Hull: Contract for ship awarded to John Ericsson; hull subcontracted to Continental Iron Works, Greenpoint, N.Y.  
 Machinery: Subcontracted to Delameter Iron Works, New York, N.Y.  
 Service speed: 5 knots; 8½ knots on trials

**Nahant (15 June 1869 *Atlas*, 10 August 1869 *Nahant*):**

Launched: 7 October 1862  
 Commissioned: 29 December 1862, Comdr. John Downes  
 Builder:  
 Hull: Harrison Loring at his City Point Works, South Boston, Mass.  
 Machinery: Harrison Loring at his City Point Works, South Boston, Mass.  
 Service speed: 5 knots

**Nantucket (15 June 1869 *Medusa*, 10 August 1869 *Nantucket*):**

Launched: 6 December 1862  
 Commissioned: 26 February 1863, Comdr. Donald McN. Fairfax