

Ironclad, USS Saugus

By Steven Lund

The American Civil War period spawned a period of unprecedented progress in the technology of naval warfare. When the conflict began the Union Navy was comprised of less than forty wooden hulled ships with only a few of them powered by steam. By the war's end powerful ironclad warships, the high tech wonders of their day, had become the mainstays of the fleet and had profoundly changed the face of naval warfare.

Almost everyone is familiar with the famous battle between the ironclads "Monitor and Merrimac" (actually rechristened the CSS Virginia by the Confederates). What most people are not aware of is that by the end of the war the Union had built over 30 of the Monitor type ironclads and that the Confederate Navy had likewise constructed over 20 of the casemate type ironclad warship style that they preferred.

The USS Monitor was the prototype of the turreted type of ironclad most favored by the union, and she was built in the astonishing time of a little over 100 days. The Union was quite satisfied with the accounting she made of herself at her one and only battle with the CSS Virginia at Hampton Roads in March of 1862. Within days, 10 ships of an improved design were ordered from the Monitor's designer, John Ericsson. The most significant changes were a refined (rounded) hull design, the pilot house on top of the turret, one 15 inch gun in place of one of the two 11 inch Dahlgren pieces on the original Monitor, increased armor and permanent smokestack and vents. This was the Passaic class.

Within a few months, the requirement for further monitors was identified along with the need for a few more improvements to the basic single-turret design. The new Canonicus class (sometimes referred erroneously as the Tippecanoe class) had a number of further refinements. The most obvious changes were in the more streamlined hull and raft designs, allowing for an increase in speed without an increase in the horsepower of the engine. In addition, the armament was increased to two 15inch guns, overall length was increased 25 feet, larger boilers were fitted, as well as improvements to the gun recoil system, armor, smokestack (armored and made semi-retractable), and to the ventilation/blower system.

This last class of monitor is the subject of the model. I originally planned to model the USS Tecumseh (after the ship whose demise inspired Adm. Farragut's famous "Damn the torpedoes, full speed ahead!" order). When I finished the weathering job on its finish and then realized that the Tecumseh was only afloat four months, I chose its sister ship the USS Saugus. The USS Saugus served her entire war time career as one of five Monitors in the James River Squadron, saw action against the Confederate ironclad squadron defending Richmond, and had lots of time to weather (it remained in service till 1891).

The Model

The model was actually inspired by a small (15inch long) paper waterline model of the Tecumseh designed and marketed by William Mahmood. He sells a line that includes three different monitor types and at least as many different Confederate ironclads, all in about the same size range. The subjects lend themselves nicely to paper as a medium because the actual warships were all built of flat or curved sections of iron plate.

Besides the actual paper model itself (which although accurate in shape and proportion, lacks a lot of detail), I came to find that there was an adequate amount of published data available to make a reasonably accurate scale model. My primary source of drawings was Warship Profile number 36, titled "United States Navy Monitors of the Civil war", published in 1974. It is a bit hard to find, but is rich in historical data on all the monitors. In addition, there turned out to be several photographic depictions of various types in some of the "Pictorial History of the Civil War" type books in the library. Armed with the various drawings in the Profile, my calculator, and a Xerox machine, I enlarged all the drawings up to the same scale.

I will have to admit up front that the hull shape is not absolutely correct. The actual shape is slightly wider and more rounded at the stern than the hull I used. The "offending"(to some, no doubt) hull is a 1/96 scale item taken from the Revell "Thermopolae" clipper ship. This was cut down to the waterline to give it the correct depth, the bow was reshaped to the correct vertical profile, the rudder was removed, and the stern was drilled to accept the prop shaft tunnel. The result is a hull that has sufficient space (barely) for the required motor, batteries, radio gear, and ballast. The overall result (since the hull size dictated the rest of the model's dimensions) is a 1/90th scale model with an overall length of 30 inches.

The deck or "raft" as it is often referred to in Civil War accounts, is one piece of 3/32 inch birch plywood, pierced for the turret, vent, and smoke stack. The scale thickness of the raft is achieved with balsa framing, filled with 1/4 inch styrofoam wherever space is available. Most of the styrofoam is at the stern raft overhang with some additional material in the bow region. The balsa and foam in the raft and additional foam in the bow and stern of the plastic hull result in enough reserve buoyancy to keep it from actually sinking if it ever takes on water. Lack of reserve buoyancy was a flaw in the actual design that resulted in the Tecumseh sinking in less than three minutes after striking a mine (called a torpedo in those days) and the Weehawken sinking at her moorings in a storm. It is also felt that this contributed to the sinking of the original Monitor as well.

The deck is attached to the hull by basswood beams in the hull fitted with aircraft type self-centering nutplates. The units were epoxied in place and then further strengthened by pins drilled through the hull. These pieces are under considerable shear strain because of the through bolts that hold the hull and raft together, necessitating the requirement to pierce the hull. The screws holding the upper and lower parts together are accessed through the holes in the deck for the turret and the stack. The watertight seal is achieved by the fact that the actual point where the hull and deck join is actually above the waterline and that I run a strip of plumber's putty around the point where they join as an added bit of "insurance". To date, the only leakage I've encountered has been a slight amount (about two thimble fulls in an hour of running) that seems

to enter through the prop shaft or rudder pushrod opening. Both openings are packed with lithium grease to minimize the leakage.

The turret is a 3 inch diameter PVC drain grill from the plumbing department of the local home improvement store. It is precisely the correct width, and its correct height above the deck is achieved by attaching the armored collar around its base at the appropriate height. It, along with the pilot house and smoke stack (both made from pill bottles) is "plated" with .010 styrene. The distinctive rivet pattern is embossed from behind with a tracing wheel. The deck top and sides are also covered with the same material and scored with the correct panel line detail. The added benefit of the grill structure in the bottom of the drain used is that it provides a good solid base for the mounting of the functional cannon and the turret pivot mounting to the servo.

Other deck details such as the cutters as well as some figures and deck fittings came from the Thermopolae model that provided the hull. The hatches and turret armored ring are Plastruct square stock and the flag poles and vent stack are various thicknesses of brass tubing. Other details are fabricated from Plastruct and sheet styrene. The overall finish is Model Master Gull Grey for the deck, Gunship Gray for the bottom of the turret and stacks, and Primer White for the top of the turret, pilot house, and stacks.

So much for the exterior, now let's talk about what is inside. The craft is equipped with a Ranger II FM, 3 channel R/C system that provides for rudder, speed control, and individually firing the cannons in the turret.

The speed control is controlled by the #2 servo through the transmitter's throttle control stick. The Dumas 6 volt unit gives forward, reverse, and stop. The unit is more than adequate for what is required of it, although somewhat on the large side for this application.

The rudder (#1) servo is positioned directly under the turret, and as a result, is used to drive both rudder and turret. This arrangement has proven to be very helpful, giving a visual indication of rudder movement on the model as well as enabling me to aim the guns to some extent (45 degrees left or right of center).

The cannons are fired by a simple lever switch moved by the #3 servo. It is controlled by a knob on the transmitter. Turn the knob left, the servo arm moves left and completes a circuit, firing the left cannon. Turn the knob the other way and the salvo is complete.

The cannons themselves are 1/4 inch O.D. thick-walled aluminum tubing. Estes model rocket ignitors provide the ignition and a few grains of black powder create a most realistic smoke cloud (with very little noise). A small wad of beeswax at the breech end prevents (or rather, reduces) blowback into the turret. There is little back pressure since there is no projectile and only light tissue paper wadding. It can be a real crowd pleaser when it slowly cruises up to the non powered CSS Tennessee model in the photo, turns its turret toward the enemy craft, and unleashes a salvo!

For you Confederate sympathizers, I can assure you that the Tennessee is not defenseless. It is equipped with a (admittedly, low tech) clockwork timer attached to a rotary switch that fires one

of its nine operative guns every minute. So, it is quite capable of spewing destruction in three directions at the hated Yankees.

All in all the model has turned out to be quite pleasing, both as an operational and as a display model. The only item that mars its appearance for static display is the rudder control horn and pushrod arm emerging from the hull on the starboard side. It is up under the raft overhang however, and is really quite unobtrusive. The scale rudder has proven to be adequate in response, and the bronze Dumas four bladed prop is also close to scale in size and shape, and provides adequate thrust. The model's appearance in the water is quite realistic. It required almost 1 1/4 lbs. of lead ballast to achieve proper trim and it displays a realistic low freeboard profile as a result. The USS Saugus has provided me and my family with many enjoyable afternoons on the pond at our local park, and it never fails to attract attention wherever it is seen.





Reference Listing

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Harlowe, Jerry L.; "Monitors, The Men, Machines, and Mystique," Thomas Publications, 2001, (ISBN 1-57747-056-7). One of the best books on the subject to date. Has lots of previously unpublished photos and a lot of new information.

Konstam, Angus; "Confederate Ironclad 1861-1865," Osprey Publishing, 2001, (ISBN 1-84176-307-1). Typical excellent Osprey treatment of the subject. Has good side/top view paintings of seven of the ships as well as a cutaway of the Virginia. Lots of other illustrations and photos.

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Marvel, William; "The Monitor Chronicles, One Sailor's Account," The Mariners Museum, 2000, (ISBN 0-684-86997-7). The letters of Engineer George Geer, covering his service on the Monitor from its commissioning to its sinking. Insights into life on board.

Paper Models International, 2001/2002 Catalog, 9910 SW Bonnie Brae Drive, Beaverton, Oregon 97008-6045. Offers extremely high quality paper models of the Monitor (two different models – one has a complete interior) and the CSS Virginia. Catalog has over 60 pages and features paper models of all types and skill levels. Phone number is (503) 646-4289.

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