= Connecticut @-@ class battleship =

The Connecticut @-@ class of pre @-@ dreadnought battleships were the penultimate class of the type built for the United States Navy . The class comprised six ships : Connecticut , Louisiana , Vermont , Kansas , Minnesota , and New Hampshire , which were built between 1903 and 1908 . The ships were armed with a mixed offensive battery of 12 @-@ inch (300 mm) , 8 @-@ inch (200 mm) , and 7 @-@ inch (180 mm) guns . This arrangement was rendered obsolete by the advent of all @-@ big @-@ gun battleships like the British HMS Dreadnought , which was completed before most of the Connecticuts entered service .

Nevertheless , the ships had active careers . The first five ships took part in the cruise of the Great White Fleet in 1907 ? 1909 ? New Hampshire had not entered service . From 1909 onward , they served as the workhorses of the US Atlantic Fleet , conducting training exercises and showing the flag in Europe and Central America . As unrest broke out in several Central American countries in the 1910s , the ships became involved in police actions in the region . The most significant was the American intervention in the Mexican Revolution during the occupation of Veracruz in April 1914 .

During the American participation in World War I , the Connecticut @-@ class ships were used to train sailors for an expanding wartime fleet . In late 1918 , they began to escort convoys to Europe , and in September that year , Minnesota was badly damaged by a mine laid by a German U @-@ boat . After the war , they were used to bring American soldiers back from France and later as training ships . The 1922 Washington Naval Treaty , which mandated major reductions in naval weapons , cut the ships ' careers short . Within two years , all six ships had been sold for scrap .

= = Design = =

The United States ' victory in the Spanish ? American War in 1898 before had a dramatic impact on battleship design , as the question of the role of the fleet ? namely , whether it should be focused on coastal defense or high seas operations ? had been solved . The fleet 's ability to conduct offensive operations overseas showed the necessity of a powerful fleet of battleships . As a result , the US Congress was willing to authorize much larger ships . Design work on what would become the Connecticut class began in 1901 . The Secretary of the Navy submitted a request for a new battleship design on 6 March to the Board on Construction . Among the issues considered was the composition and placement of the secondary battery . The preceding design , the Virginia class , placed some of its secondary guns in fixed turrets atop the main battery turrets as a way to save weight . The Board disliked the arrangement , as some members argued that guns in casemates could be fired faster . Additionally , the Virginias had mounted a mixed secondary battery of 6 in (152 mm) and 8 in (203 mm) guns ; the Bureau of Ordnance (BuOrd) had recently introduced a quick @-@ firing 7 in (178 mm) gun , which was more powerful than the 6 in and fired faster than the 8 in .

The initial version of the Connecticut design , proposed by BuOrd , featured a secondary battery of twenty @-@ four 7 in guns with the same number of 3 in (76 mm) guns for defense against torpedo boats . The armor layout was more comprehensive but thinner , and displacement rose to 15 @,@ 560 long tons (15 @,@ 810 t) . BuOrd determined that a longer and finer hull shape , coupled with a small increase in engine power , would maintain the standard speed of 19 knots (35 km / h ; 22 mph) . The Bureau of Construction and Repair (C & R) proposed a ship more closely based on the Virginias , with the same two @-@ story turrets and mixed 6- and 8 @-@ inch secondary battery , on a displacement of 15 @,@ 860 long tons (16 @,@ 110 t) . This design featured only eight 3 in guns , which was deemed wholly insufficient to defend the ship from small craft .

In November , the Board agreed to a compromise design that incorporated a secondary battery of eight 8 in guns in four twin turrets amidships and twelve 7 in guns in casemates . The decision to retain the 8 in guns was made in large part due to American experiences in the Spanish ? American War three years before . US Navy officers had been impressed with the performance of the gun at the Battle of Santiago de Cuba ; despite scoring only 13 hits out of 309 shells fired , the gun had a

flat trajectory and good range for its size . Armor protection was improved over the BuOrd design , with a thicker armored belt and casemate protection , albeit at the expense of thinner armor covering the barbettes that supported the gun turrets . The designers reasoned that since the barbettes were behind the belt and a transverse bulkhead , weight could be saved by reducing the level of direct protection .

The last four ships , starting with Vermont , received slightly improved armor protection , with the last vessel ? New Hampshire ? having further improvements . As a result , they are sometimes referred to as the Vermont class . The six Connecticut @-@ class ships were the most powerful pre @-@ dreadnought type battleship built by the US Navy , and they compared well with contemporary foreign designs . They were nevertheless rendered obsolescent almost immediately due to the advent of the " all @-@ big @-@ gun " battleship epitomized by the British HMS Dreadnought . Two follow @-@ on ships , the Mississippi class , were built at the same time to a design based on the Connecticuts but significantly reduced in size .

= = = General characteristics and machinery = = =

The Connecticut @-@ class ships were 450 feet (140 m) long at the waterline and 456 ft 4 in (139 @.@ 09 m) long overall . They had a beam of 76 ft 10 in (23 @.@ 42 m) and a draft of 24 ft 6 in (7 @.@ 47 m) . Freeboard forward was 20 ft 6 in (6 @.@ 25 m) . They displaced 16 @,@ 000 long tons (16 @,@ 000 t) as designed and up to 17 @,@ 666 long tons (17 @,@ 949 t) at full load . The ships had a flush deck , and they were better sea boats than preceding designs , many of which had poor stability . The Connecticut class had a metacentric height of 4 @.@ 62 feet (1 @.@ 41 m) . As built , the ships were fitted with two heavy military masts , but these were quickly replaced by lattice masts in 1909 . They had a crew of 42 officers and 785 men .

The ships were powered by two @-@ shaft triple @-@ expansion steam engines , with steam provided by twelve coal @-@ fired Babcock & Wilcox boilers . The engines were rated at 16 @,@ 500 indicated horsepower (12 @,@ 300 kW) and generated a top speed of 18 knots (33 km / h ; 21 mph) . The boilers were trunked into three closely spaced funnels amidships . The first five ships were equipped with eight 100 @-@ kilowatt (130 hp) electricity generators , while New Hampshire had four of these generators and two 200 kW (270 hp) units . All of the ships had a combined output of 800 kW (1 @,@ 100 hp) ; this was the highest output in any American warship then built . Steering was controlled with a single rudder . The ships ' turning radius was 620 yards (570 m) at a speed of 12 knots (22 km / h ; 14 mph) .

On trials , the ships exceeded their design speed slightly , with Minnesota being the fastest , at 18 @.@ 85 knots (34 @.@ 91 km / h ; 21 @.@ 69 mph) . The ships carried 900 long tons (910 t) of coal normally , but additional spaces could be used for coal bunkers , with storage capacity ranging between 2 @,@ 249 to 2 @,@ 405 long tons (2 @,@ 285 to 2 @,@ 444 t) for each ship . At a cruising speed of 10 knots (19 km / h ; 12 mph) , the ships could steam for 6 @,@ 620 nautical miles (12 @,@ 260 km ; 7 @,@ 620 mi) , though New Hampshire 's engines were more efficient , allowing her to steam for 7 @,@ 590 nautical miles (14 @,@ 060 km ; 8 @,@ 730 mi) at the same speed .

= = = Armament = = =

The ship was armed with a main battery of four 12 inch / 45 Mark 5 guns in two twin gun turrets on the centerline , one forward and aft , as was typical for battleships of the period . The guns fired a 870 @-@ pound (390 kg) shell at a muzzle velocity of 2 @,@ 700 feet per second (820 m / s) . The turrets were Mark VI mounts , which allowed for reloading at all angles of elevation . These mounts could elevate to 20 degrees and depress to -5 degrees . Each gun was supplied with sixty shells . New Hampshire 's magazines were rearranged compared to her sisters , which allowed for her to carry 20 percent more 12- and 7 @-@ inch shells , though under normal conditions she carried the same load .

The secondary battery consisted of eight 8 @-@ inch (203 mm) / 45 guns and twelve 7 @-@ inch

(178 mm) / 45 guns ; this mixed battery proved to be problematic , as shell splashes from the two types could not be distinguished . The 8 @-@ inch guns were mounted in four twin Mark XII turrets amidships and the 7 @-@ inch guns were placed in casemates in the hull . The 8 @-@ inch guns were the Mark VI type , and they fired 260 lb (120 kg) shells at a muzzle velocity of 2 @,@ 750 ft / s (840 m / s) . The 7 @-@ inch Mark I guns fired a 165 lb (75 kg) shell at 2 @,@ 700 ft / s . These guns were later removed during World War I and converted for use on tracked gun carriages in France . The outfit per gun was 100 shells for both types .

For close @-@ range defense against torpedo boats , they carried twenty 3 @-@ inch / 50 guns mounted in casemates along the side of the hull and twelve 3 @-@ pounder guns . They also carried four 37 mm (1 @.@ 5 in) 1 @-@ pounder guns . As was standard for capital ships of the period , the Connecticut class carried four 21 in (530 mm) torpedo tubes , submerged in their hulls on the broadside . Each ship carried a total of 16 torpedoes . They were initially equipped with the Mark I Bliss @-@ Leavitt design , but these were quickly replaced with Mark II , designed in 1905 . The Mark II carried a 207 pounds (94 kg) warhead and had a range of 3 @,@ 500 yards (3 @,@ 200 m) at a speed of 26 knots (48 km / h ; 30 mph) .

= = = Armor = = =

The first two ships ' main armored belt was 11 in (279 mm) thick over the machinery spaces and reduced to 9 in (229 mm) abreast of the main battery turrets . This portion of the belt was 200 ft (61 m) long and 9 feet 3 inches (3 m) wide . On either end of the ship , the belt then thinned , first to 7 in , then to 5 in (127 mm) and finally to 4 in (102 mm) at the bow and stern . The last four ships ' belts were reduced to 9 in between the main battery . The armored deck was 1 @.@ 5 in (38 mm) thick amidships , where it was partially protected by the belt and casemate armor . It had 3 in thick sloped sides , which connected to the bottom edge of the belt . The deck was increased to 3 in forward and aft , where it was directly exposed to shellfire , also with 3 in thick sloped sides . New Hampshire 's belt was slightly shortened to permit a thicker deck over the magazines . Each ship 's conning tower had 9 in (229 mm) thick sides and a 2 in (51 mm) thick roof .

The main battery gun turrets had 11 in thick faces , with 9 in thick sides and 2 @.@ 5 in (64 mm) thick roofs . The supporting barbettes had the 10 in (254 mm) of armor plating , reduced to 6 in (152 mm) . The secondary turrets had 6 @.@ 5 in (165 mm) of frontal armor , with 6 in on the sides and 2 in on the roofs . Their barbettes were given 6 in of armor plating on the outboard sides and 4 in inboard . The casemates for the 7 in guns were 7 in thick and below the gun ports , the casemates reduced slightly to 6 in . For the last four ships , the savings in weight gained by reducing the thickness of the belt were used to increase the lower casement armor to 7 in . Those for the 3 in guns were 2 in thick . The 7 in guns were divided by splinter bulkheads that were 1 @.@ 5 to 2 @.@ 5 inches (38 to 64 mm) thick to prevent one shell hit from disabling multiple guns .

= = Ships = =

= = Service history = =

All six ships of the class served with the Atlantic Fleet for the duration of their careers . The first five ships took part in the cruise of the Great White Fleet in 1907 ? 09 . The fleet left Hampton Roads on 16 December 1907 and steamed south , around South America and back north to the US west coast . The ships then crossed the Pacific and stopped in Australia , the Philippines , and Japan before continuing on through the Indian Ocean . They transited the Suez Canal and toured the Mediterranean before crossing the Atlantic , arriving bank in Hampton Roads on 22 February 1909 . New Hampshire , which had not been completed in time to take part in the journey , met the fleet there during a naval review with President Theodore Roosevelt .

The ships then began a peacetime training routine off the east coast of the United States and the Caribbean , including gunnery training off the Virginia Capes , training cruises in the Atlantic , and

winter exercises in Cuban waters . In late 1909 , all six ships crossed the Atlantic to visit British and French ports . Louisiana and Kansas made another trip to Europe in early 1911 . As political unrest began to erupt in several Central American countries in the 1910s , the ships became increasingly active in the region . All six ships became involved in the Mexican Revolution , including the occupation of Veracruz in April 1914 ; Vermont and New Hampshire were among the ships that contributed landing parties to the initial occupation of the city . Several men from the two ships were awarded the Medal of Honor during the action .

In July 1914 , World War I broke out in Europe ; the United States remained neutral for the first three years of the war . Tensions with Germany came to a head in early 1917 following the German unrestricted submarine warfare campaign , which sank several American merchant ships in European waters . On 6 April 1917 , the United States declared war on Germany . The Connecticut @-@ class ships initially were used for training gunners and engine room personnel that would be necessary for the rapidly expanding wartime fleet . In June 1918 , New Hampshire and Louisiana were involved in a serious gunnery accident , where gunners aboard the former accidentally hit the latter , killing one and injuring several other men . The following month , Louisiana was used to test Arthur Pollen 's Argo Clock , the first fire control system to use an analog computer to calculate firing solutions .

From late 1918 , the ships were used to escort convoys part @-@ way across the Atlantic . In late September , Minnesota struck a naval mine laid by the German U @-@ boat U @-@ 117 , causing serious damage that kept her out of service for five months . Convoy duty was cut short by the German surrender in November ; thereafter , the Connecticuts were used to ferry American soldiers back from the battlefields of France . This work was completed by mid @-@ 1919 . The ships briefly operated as training ships in the early 1920s , though under the terms of the Washington Naval Treaty , they were all sold for scrap by 1924 and broken up .