= Maine @-@ class battleship =

The three Maine @-@ class battleships ? Maine , Missouri , and Ohio ? were built at the turn of the 20th century for the United States Navy . Based on the preceding Illinois class , they incorporated several significant technological advances over the earlier ships . They were the first American battleships to incorporate Krupp cemented armor , which was stronger than Harvey armor , smokeless powder , which allowed for higher @-@ velocity guns and water @-@ tube boilers , which were more efficient and lighter . The Maines were armed with four 12 @-@ inch (300 mm) guns and sixteen 6 @-@ inch (150 mm) guns , and they could steam at a speed of 18 knots (33 km / h ; 21 mph) , a significant increase over the Illinois class .

The three Maine @-@ class battleships served in a variety of roles throughout their careers . Maine and Missouri remained in the Atlantic Fleet for their careers , though Ohio initially served with the Asiatic Fleet from 1904 to 1907 . All three ships took part in the cruise of the Great White Fleet in 1907 ? 1909 , though Maine 's excessive coal consumption forced her to proceed independently for most of the voyage . Missouri was used as a training ship for much of the rest of her career , and Ohio took part in the American intervention in the Mexican Revolution in 1914 . All three ships were employed as training ships during World War I. After the war , all three ships were withdrawn from service between 1919 and 1920 before being sold for scrap in 1922 and 1923 and broken up .

= = Design = =

By 1897 , the US Navy had five battleships under construction , and no plans to request additional units for 1898 . With the destruction of the armored cruiser Maine in Havana harbor and the subsequent declaration of war on Spain on 25 April 1898 , however , a large naval expansion program was passed through Congress . The program called for three new battleships , the first one which would be named for the destroyed Maine . Design work began immediately , though the broad parameters for the new battleships proved to be contentious . The Board on Construction advocated a design based on Iowa , to be armed with 13- , 8- , and 6 @-@ inch (330 , 203 , and 152 mm) guns , though others on the board argued that repeating the Illinois class , which was armed with 12 in (300 mm) and 6 in guns and had a speed of 16 knots (30 km / h ; 18 mph) , would save construction time . Additionally , they pointed out that 8 in guns could not be incorporated within the displacement limit .

Several important technological advances had become available by this time , however , which necessitated several changes to the design . The advent of smokeless powder permitted smaller guns with greater muzzle velocities ; the Navy had accordingly designed a 12 @-@ inch (305 mm) 40 @-@ caliber high @-@ velocity gun . In addition , Krupp cemented armor had been developed in Germany ; the steel was a significant improvement over the older Harvey process . Since the steel was stronger , thinner armor plating could achieve the same level of protection and more importantly , significant savings in weight . Water @-@ tube boilers were also now sufficiently reliable for use in warships . These were lighter and substantially more efficient than older fire @-@ tube boilers .

Shortly after the three ships had been authorized , the Navy learned that the Russian battleship Retvizan , recently ordered from William Cramp & Sons in Philadelphia , would be capable of steaming at 18 knots (33 km / h ; 21 mph) , a margin of 2 knots (3 @.@ 7 km / h ; 2 @.@ 3 mph) over the Maine design . The Navy requested that the shipyards submitting designs for the contract increase the speed of their proposed ships to match the Russian vessel . Cramp & Sons responded by lengthening the hull by 15 feet (4 @.@ 6 m) to increase its fineness (and thus reduce drag) and incorporate new Niclausse boilers , while the Newport News Shipbuilding & Drydock Company lengthened the hull by 20 feet (6 @.@ 1 m) and increased the horsepower of the propulsion system by sixty percent , to 16 @,@ 000 indicated horsepower (12 @,@ 000 kW) . Ultimately , the Newport design was chosen for the new ships .

= = = General characteristics and machinery = = =

The ships of the Maine class were 388 feet (118 m) long at the waterline and 393 ft 11 in (120 @.@ 07 m) long overall . They had a beam of 72 ft 3 in (22 @.@ 02 m) and a draft of 23 ft 9 in (7 @.@ 24 m) to 24 ft 4 in (7 @.@ 42 m) . They displaced 12 @,@ 362 to 12 @,@ 846 long tons (12 @,@ 560 to 13 @,@ 052 t) as designed and up to 13 @,@ 700 long tons (13 @,@ 900 t) at full load . The ships had a metacentric height of 2 @.@ 36 ft (0 @.@ 72 m) . They had a forecastle deck that extended to the main mast . As built , they were fitted with heavy military masts with fighting tops , but these were replaced by cage masts in 1909 . They had a crew of 40 officers and 521 enlisted men , which increased to 779 ? 813 officers and men .

The ships were powered by two @-@ shaft triple @-@ expansion steam engines rated at 16 @,@ 000 indicated horsepower (12 @,@ 000 kW) . Steam was provided by twelve coal @-@ fired Thornycroft boilers for Missouri and Ohio , and twenty @-@ four Niclausse boilers for Maine , which were trunked into three tall funnels amidships . The ships ' engines generated a top speed of 18 knots (33 km / h ; 21 mph) , though Ohio only made 17 @.@ 82 knots (33 @.@ 00 km / h ; 20 @.@ 51 mph) on her speed trials . Normal coal capacity was 1 @,@ 000 long tons (1 @,@ 000 t) , though Maine could carry up to 1 @,@ 867 long tons (1 @,@ 897 t) , Missouri had capacity for 1 @,@ 837 long tons (1 @,@ 866 t) , and Ohio could store 2 @,@ 150 long tons (2 @,@ 180 t) of coal . At a speed of 10 knots (19 km / h ; 12 mph) , the ships had a designed endurance of 4 @,@ 900 nautical miles (9 @,@ 100 km ; 5 @,@ 600 mi) , though they could steam for 5 @,@ 660 nmi (10 @,@ 480 km ; 6 @,@ 510 mi) at that speed . Ohio 's significantly greater coal capacity allowed her to cruise for 6 @,@ 560 nmi (12 @,@ 150 km ; 7 @,@ 550 mi) at that speed . Steering was controlled by a single rudder , and the ships had a turning radius of 350 yards (320 m) at 10 knots .

= = = Armament = = =

The ships were armed with a main battery of four 12 inch / 40 Mark 3 guns in two twin gun turrets on the centerline , one forward and aft . The guns fired a 870 @-@ pound (390 kg) shell at a muzzle velocity of 2 @,@ 400 feet per second (730 m / s) . The turrets were Mark IV mounts , which required the guns to be horizontal to be reloaded . These mounts could elevate to 15 degrees and depress to -5 degrees , and they were electrically operated , and the guns could be operated independently .

The secondary battery consisted of sixteen 6 @-@ inch (152 mm) / 45 Mark 6 guns , which were placed in casemates in the hull . Ten were mounted in a battery on the upper deck , four more were located in another battery directly above on the forecastle deck , and the last two were placed in sponsoned casemates in the bow . They fired a 105 lb (48 kg) shell at 2 @,@ 800 ft / s (850 m / s) . For close @-@ range defense against torpedo boats , they carried six 3 @-@ inch / 50 guns mounted in casemates along the side of the hull , eight 3 @-@ pounder guns , and six 1 @-@ pounder guns . As was standard for capital ships of the period , the Maine @-@ class battleships carried two 18 in (457 mm) torpedo tubes , submerged in her hull on the broadside . They were initially equipped with the Mark II Whitehead design , which carried a 140 @-@ pound (64 kg) warhead and had a range of 800 yards (730 m) at a speed of 27 knots (50 km / h ; 31 mph) .

= = = Armor = = =

The ships ' armor consisted of both Krupp cemented and Harvey steel . Their main armored belt was 11 in (279 mm) thick over the magazines and the machinery spaces and tapered down to 5 @.@ 5 in (140 mm) on the lower edge . The belt was 8 in (203 mm) elsewhere and reduced to 4 in (102 mm) on the bottom edge . The belt extended from 3 ft 3 in (0 @.@ 99 m) above the waterline to 4 ft 3 in (1 @.@ 30 m) below . The main deck was 2 @.@ 5 in (64 mm) thick and was increased slightly to 2 @.@ 75 in (70 mm) on the sloped sides that connected it to the belt . The deck was increased to 4 in at the stern . The main battery gun turrets had 12 in thick faces , and the supporting barbettes had the same thickness of armor plating on their exposed sides . 9 in (229 mm) thick bulkheads connected the belt with the barbettes ; behind these , the barbettes were protected

with 8 in of steel . Armor that was 6 in thick protected the secondary battery . The conning tower had 10 in (254 mm) thick sides with a 2 in (51 mm) thick roof .

= = Construction = =

= = Service history = =

After Maine and Missouri entered service , they were assigned to the North Atlantic Fleet , while Ohio , built on the West Coast of the United States , was instead sent to serve as the flagship of the Asiatic Fleet based in the Philippines . In April 1904 , a turret fire killed 36 men aboard Missouri , but the quick action of three men prevented the fire from reaching the magazines and destroying the ship , for which they were awarded the Medal of Honor . In 1907 , Ohio returned from the western Pacific and joined her sisters in what was now the Atlantic Fleet . During this period , Maine served as the flagship of the Atlantic Fleet until she was relieved in April 1907 .

In December 1907 , the three ships and the other battleships in the Atlantic Fleet steamed out of Hampton Roads , Virginia , at the start of the cruise of the Great White Fleet . The fleet steamed south , around South America and back north to the US west coast . Maine was detached owing to her excessive use of coal along with the battleship Alabama ; the two ships continued the journey independently and on a greatly shortened itinerary . The rest of 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 for a naval review with President Theodore Roosevelt .

Over the following six years , the ships had fairly uneventful careers . Missouri spent most of the time out of active service , only recommissioning for summer training cruises with midshipmen from the US Naval Academy . In 1914 , Ohio was sent to Mexican waters to protect American interests in the country during the Mexican Revolution . After the United States entered World War I by declaring war on Germany on 6 April 1917 , all three ships were used to train naval recruits for the expanding wartime fleet . Following the German surrender in November 1918 , Missouri was used to ferry American soldiers back from France , though the other two vessels were not so employed , since their short range and lack of sufficient accommodations would have made them inefficient transports . The three ships remained in active service only very briefly after the war . Ohio was decommissioned in January 1919 and Missouri and Maine followed in September 1919 and May 1920 , respectively . All three ships were sold for scrap , with Maine and Missouri going to the breakers ' yard in January 1922 and Ohio joining them in March 1923 .