

= Mississippi @-@ class battleship =

The Mississippi class of battleships comprised two ships which were authorized in the 1903 naval budget : Mississippi and Idaho ; these were named for the 20th and 43rd states , respectively . These were the last predreadnought battleships to be designed for the United States Navy , but not the last to be built , because one more ship of a prior design was completed later under the 1904 naval budget . While the quality and technology of the weaponry and armor were first @-@ rate , these ships included a variety of main , intermediate , secondary , and tertiary gun sizes in a predreadnought configuration which became obsolete before the ships were completed .

The first several years of the 20th century were a period of confusion and transition in U.S. naval strategy , tactics , and ship design . The Mississippi class , along with the preceding Connecticut class , were designed based on lessons learned in the Spanish ? American War , but while they were under construction , the Russo @-@ Japanese War , war games , and experimentation demonstrated new priorities and concepts which would influence future designs . This was also a period where rapid development of techniques and training in the use of large guns made the inclusion of rapid @-@ fire intermediate and secondary weapons unnecessary . Future U.S. designs would reduce the confusing array of guns sizes in predreadnought battleships and rely on one gun size for the main armament , the " all @-@ big @-@ gun " concept , along with many small guns of a uniform caliber to combat small vessels in close proximity .

The Mississippi @-@ class ships were smaller than the several preceding classes of U.S. battleships . They were designed in an attempt to reduce the rapid growth in the size and cost of U.S. battleships . Also , a theory existed among influential naval leaders , including Dewey and Mahan , that many small battleships could be strategically useful , as were small ships of the line in the 18th and 19th centuries . In essence , the Mississippi @-@ class ships were smaller versions of the preceding Connecticut class with virtually the same armament and armor , but the reduction in length , engine size , and fuel capacity caused them to be slow and short @-@ ranged . Other design compromises caused them to perform poorly in terms of steering , stability , and sea keeping .

These ships served in the U.S. Navy from 1908 to 1914 , when they were sold to Greece . Most U.S. service was with the Atlantic Fleet , though these ships did not perform well in fleet operations due to their lower speeds and shorter ranges . The ships were frequently detached for special tasks , including goodwill tours , and Mississippi was used for a time as a seaplane support vessel . Both ships took part in U.S. military interventions in Mexico and the Caribbean , including landing Marines and supporting early air operations .

In 1914 , both Mississippi @-@ class ships were sold to Greece ; this was the only sale of functional U.S. battleships to a foreign government . From 1914 to the early 1930s , the ships were active in the Greek Navy , serving mostly in coastal defense and attack roles . In these missions and in the calmer waters of the Mediterranean , their limitations were less pronounced . They served in the Russian Civil War and the Greco @-@ Turkish War . By the mid @-@ 1930s , they were relegated to reserve and auxiliary roles , and Idaho 's guns were removed to coastal fortifications . Both were sunk by German aircraft in 1941 , and raised in the 1950s to be sold for scrap .

= = Purpose = =

In the early 20th century , the U.S. Navy was growing rapidly . The Navy commissioned its first battleships in 1895 , and by the middle of the next decade , Jane 's Fighting Ships ranked its battle line second only to the British Navy . However , this rapid growth was not universally supported either within the government or within the Navy . Compromises between powerful groups were frequently necessary to get funding .

The Mississippi @-@ class ships were designed to meet Congressional and Navy Department objectives of reducing the escalating cost of new battleships , the quantity , size , and cost of which had increased dramatically over the first two decades of U.S. battleship production . A division occurred among U.S. naval planners in the early years of the 20th century over whether to have

technically superior ships or many less expensive ones , with President Theodore Roosevelt among those supporting the former and Admiral of the Navy George Dewey along with Captain Alfred Thayer Mahan supporting the latter approach . The 1903 naval budget effected a compromise by calling for five ships : three more ships of the 16 @,@ 000 @-@ ton Connecticut class and two ships of a new less expensive class of about 13 @,@ 000 tons , with the design still to be determined .

The ships that became the Mississippi class were intended to serve as the modern equivalent of 19th @-@ century third @-@ rate ship of the line , offering what was thought to be an efficient compromise between sailing ability (speed , handling) , fire power , and cost . This concept had formed the backbone of the sailing battle fleets of the previous century , but trends in early 20th century naval strategies were making the third @-@ rate concept obsolete . Prevailing strategies called for a consistent battle line of first @-@ rate units . The next U.S. battleship design , the South Carolina class , was a completely different approach returning to the displacement of the Connecticut class and using the all @-@ big @-@ gun format similar in concept to the HMS Dreadnought .

= = Design = =

The Mississippi @-@ class battleships were the last predreadnought U.S. battleship class to be designed ; however , New Hampshire , the last ship of the prior Connecticut @-@ class design , was authorized and completed after these ships ; therefore , it was the last U.S. predreadnought ship to be built .

While Congress had authorized three vessels in the 13 @,@ 000 @-@ ton range , the design was not specified in the 1903 naval budget . Three approaches were initially considered : a scaled @-@ down version of the preceding 16 @,@ 000 @-@ ton Connecticut class , five of which had been approved with the 1902 and 1903 budgets ; a scaled @-@ up version of the 12 @,@ 500 @-@ ton Maine class , an 1898 design , three of which were commissioned from 1902 to 1904 ; and a completely new design which might incorporate new ideas and technology . Interesting adaptations were considered for new designs , and weight @-@ saving technology could allow increased efficiencies to be achieved from the older Maine class design , which was closest to the weight goal .

As with most U.S. naval designs , coal storage and engine efficiency were more important than in European designs . U.S. ships might have to fight far from their home shores , especially in the Pacific . Even in the Caribbean , U.S. forces might be farther from their coaling stations than a European power with colonial bases . Draft was a concern , since southern U.S. harbors tended to have shallow entrances , and some proponents felt that all ships should be able to egress all major harbors . Beams were typically limited by the width of dry docks .

= = = Armament = = =

In 1903 , differing concepts of the ultimate combination of guns were available , with many ideas based on various experiences and interpretations from recent naval battles , war games , and other experimentation . Recent U.S. battleship designs had included primary guns , intermediate guns , secondary guns , and tertiary guns , which were typical in the predreadnought configuration . In 1890 , the U.S. Navy had pioneered the use of 8 @-@ inch (200 mm) intermediate guns with the Indiana class , but had not used these consistently in their previous designs because opinions and experiences varied .

The quality of guns , armor , ordnance , and design was changing rapidly , so experience could quickly become irrelevant . Combat experience in the Spanish ? American War had shown the value of many smaller guns at close range , where the larger guns had been inaccurate . In the Russo Japanese War of 1904 ? 1905 , just six years later , decisive effects were obtained at long ranges , well beyond the effective limits of 8 @-@ inch (200 mm) ordnance . However , by this point the designs were established for the Mississippi class and the keels had already been laid down .

===== Main batteries =====

Recent American designs had continued to include large primary batteries of either 12 @-@ inch (300 mm) or 13 @-@ inch (330 mm) guns , along with several intermediate 8 @-@ in guns for faster fire in closer combat with armored vessels . The lighter intermediate guns were considered valuable for penetrating upper @-@ level armor , where the heavy guns were more effective on the main belt and heavy turrets . The former were likely to diminish the fighting ability of the opponent , while the latter were more likely to sink her .

Earlier U.S. battleships had used 13 @-@ in guns with black powder propellant ; the 1898 design of the Maine class used more powerful but smaller 12 @-@ in guns using smokeless powder , giving a greater velocity and flatter trajectory . The 12 @-@ in rifles available in 1904 had a range of 9 @,@ 000 yards (8 @,@ 200 m) , about double the range of the black powder main armament used in the Spanish ? American War . These were considered an excellent compromise between weight and firepower , since limitations in gunnery control made longer @-@ range guns impractical . The contemporary consideration was not whether to go larger , but whether to go with more . In 1902 , naval officers , with the backing of President Theodore Roosevelt , began to develop superior fire control techniques and equipment . The development of better spotting and range finders led to improvements in range capacity and accuracy . At the same time , superior training and systems significantly reduced the time required to load and fire the large guns , from three minutes to one minute .

Intermediate 8 @-@ in guns had been discontinued in 1896 with the Illinois class , but based on experience in the Spanish ? American War in 1898 , 8 @-@ in 45 @-@ caliber guns were reinstated in the Virginia class and continued in the Connecticut class . Typically , these were carried in two @-@ gun turrets , but the placement of the turrets had been inconsistent in prior designs ; in two prior designs , the turrets for the 8 @-@ inch guns were superimposed over the turrets for the 12 @-@ inch guns (see Kearsarge and Virginia classes) . Some designers felt that 8 @-@ in guns were redundant to the faster firing 7 @-@ inch 45 @-@ caliber guns carried in casemates . Others argued that increases in the rate of fire and accuracy of the 12 @-@ inch guns eliminated the need for any smaller guns in the main battery .

===== Secondary batteries =====

In 1903 , secondary batteries were typically considered to be a combination of torpedo defense ? defense against smaller boats armed with torpedoes , such as torpedo boats or destroyers ? and weapons to attack the lightly armored upper structures of capital ships .

Recent U.S. warships had mounted a combination of a few 7 @-@ inch or 6 @-@ inch guns and many smaller guns in the 2 @-@ inch (51 mm) to 3 @-@ inch (76 mm) range (6 @-@ pounder to 12 @-@ pounder in the traditional terms) . The larger of these guns were typically protected in casemates and the smaller ones open on the deck or in lightly protected casemates .

A fast @-@ firing 7 @-@ inch 45 @-@ caliber gun had been adopted with the previous battleship class to replace earlier 6 @-@ inch guns ; these brought a significant improvement in ballistics , expanding the potential beyond torpedo defense , but came with drawbacks . Various opinions on the best combination of guns existed : all 8 @-@ inch , all 7 @-@ inch , or a mix . Though considered to be quick @-@ firing , the propellant for 7 @-@ inch guns was loaded in bags , making them slower than contemporary 6 @-@ inch guns . The Navy considered these to be excellent for the intended role ; however , in World War I North Atlantic convoy duty , the disadvantages in seakeeping outweighed the utility ; they were removed from battleships remaining in U.S. service in 1918 .

Beginning with the Maine @-@ class vessels , commissioned in 1902 , the 3 @-@ inch (76 mm) 50 @-@ caliber gun (12 @-@ pounder) was used on most U.S. battleships as an antitorpedo @-@ boat weapon . These and smaller weapons are frequently referred to as tertiary guns . This role was filled back to the earliest U.S. battleships , including the Texas and first Maine , by the 6 @-@

pounder 2 @. 24 @- inch (57 mm) . Most 3 @- in guns were removed from U.S. battleships before combat operations in World War I.

=== Competing designs ===

The future of battleship weaponry was at a crossroads . Opinions varied among top naval leaders ; some U.S. naval leaders were discussing the all @- big @- gun concept in parallel with the British HMS Dreadnought , while other designers felt that the torpedo would completely replace the gun , and battleships should become heavily armored launch platforms . Other proposals included even more but smaller primary guns , in the 11 @- inch (280 mm) size to save on weight . In 1903 , analysis of war games had determined that one battleship with 12 11 @- inch or 12 @- inch guns , in a hexagonal turret placement , could be superior to three conventional battleships in individual actions . Other analysis suggested that in fleet actions , only broadsides were effective , thus maximizing the number of centerline guns was the most efficient approach . While neither approach was incorporated in the Mississippi class , the centerline maximum broadside concept was followed in all subsequent U.S. battleship designs .

=== Final design ===

In the end , these ships were built with main batteries identical to the Connecticut class , while reducing by four guns the secondary 7 @- inch battery , omitting eight of the tertiary 3 @- inch guns , and sacrificing two torpedo tubes . Subsequent designs would eliminate the 7 @- inch batteries completely , and most of the 3 @- inch guns were removed from other battleships before combat in World War I , so in this respect , the design did not suffer by comparing forward .

The main battery consisted of four 12 @- inch 45 @- caliber guns , meaning that the gun is 45 times as long as it is in diameter . These were considered quick @- firing guns and were arranged in two twin turrets , one forward and one to the rear of the main superstructure . The eight 8 @- inch 45 @- caliber guns were arranged in four twin turrets outboard of the main superstructure on each side of the ship .

The remaining eight 7 @- inch 45 @- caliber guns were distributed four per side , in casemates on the side of the ship , below the main deck . Four 3 @- inch (76 mm) 50 @- caliber guns were mounted in the upper casemates (on the main deck) , two per side , behind 2 @- inch (51 mm) of armor plate . Another two , one per side , were mounted in blister casemates on the gun deck , near the bow . The remaining eight guns were on open mounts on the upper deck , the bridge , and other deck spaces . Two submerged torpedo tubes were fitted on the broadside , near the bow of the ships .

=== Armor ===

Prior to the mid 1870s , armor was made of wrought iron plate , sometime backed with wood . In the 1870s , compound armor was developed , where a hardened steel face was cemented to a softer iron backing , which prevented cracking . During the late 1880s , nickel @- steel armor was devised and in 1890 , the Harvey process was developed , where a nickel @- steel plate was treated with carbon and hardened in cold water . This process allowed one homogeneous steel plate to have both a hard surface and a softer back which was less likely to crack . During the 1890s , Krupp armor further refined the Harvey process by including additional metals in the alloy and developing a system where the hardening process penetrated more deeply into the plates . Tests showed that 5 @. 75 @- inch (146 mm) of Krupp armor was equal to 7 @. 75 @- inch (197 mm) of Harvey armor , 12 @- inch (300 mm) of compound armor , and 12 @- inch (300 mm) of wrought iron plate , while in thinner plates , Harvey armor was basically equal to Krupp .

The Mississippi @- class ships used a combination of Harvey- and Krupp @- style armor (American @- made) , with much of the side armor backed with teak wood , consistent with other U.S. capital ships of the decade . The amount of armor and its strength was consistent with the

preceding Connecticut class and in some cases was more complete in coverage and was thicker , especially compared to the earliest ships in that series . The belt armor was thinner , 9 in (230 mm) compared to 11 in (280 mm) , but longer , 244 ft (74 m) compared to 200 ft (61 m) , despite the Mississippi class being shorter , 382 ft (116 m) compared to 456 ft (139 m) . The primary turret armor was thicker by an inch ? 12 in (300 mm) thick ? as opposed to 11 in (280 mm) on the USS Connecticut .

== Machinery ==

When these ships were designed , the older technology of reciprocating steam engines was slowly being replaced by the newer technology of steam turbine propulsion . While turbines generally meant more speed , they were less fuel @-@ efficient and limited the range of the ships unless more fuel could be stored . Early Dreadnought designs , which were in simultaneous development with the Mississippi class , used primitive direct @-@ drive turbines . The U.S. Navy was slow to fully adopt turbines , and only used them exclusively in battleship production when indirect transmissions became refined (gear reduction or turbo @-@ electric) . Several subsequent battleship classes were built where otherwise identical vessels had different types of engines (for example , the Delaware and Nevada classes) .

Mississippi and Idaho were equipped with two @-@ shaft vertical triple @-@ expansion steam engines , which drove two propellers . These were reciprocating engines where the steam was used multiple times (triple expansion) for greater efficiency . Steam was provided by eight Babcock & Wilcox boilers . Their engines were rated at 10 @,@ 000 indicated horsepower (7 @,@ 500 kW) , which produced a top speed of 17 knots (31 km / h ; 20 mph) . On trials , Mississippi reached 13 @,@ 607 ihp (10 @,@ 147 kW) and a maximum speed of 17 @.@ 11 kn (31 @.@ 69 km / h ; 19 @.@ 69 mph) . In terms of speed , this class of ships was inferior to several preceding classes , and was only slightly superior to the Illinois class which was laid down in 1896 .

The ships carried 600 long tons (610 t) of coal in purpose @-@ designed coal bunkers and up to another 1 @,@ 200 long tons (1 @,@ 200 t) of coal could be stored in voids in the sides of the hull . This provided the ships with a range of 5 @,@ 800 nautical miles (10 @,@ 700 km ; 6 @,@ 700 mi) at a cruising speed of 10 kn (19 km / h ; 12 mph) . The range was less than the previous class .

== General characteristics ==

The final design was a scaled @-@ down version of the preceding Connecticut class . By comparison , these ships were a knot slower and had a lower freeboard , so they did not perform as well in heavy seas . The two Mississippi @-@ class ships were 382 ft (116 m) long overall , had a beam of 77 ft (23 m) and a draft of 24 ft 8 in (7 @.@ 52 m) . The ships were designed to displace 13 @,@ 000 long tons (13 @,@ 209 t) at normal displacement and up to 14 @,@ 465 long tons (14 @,@ 697 t) at full combat load . Each ship had a crew of 34 officers and 710 enlisted men .

The World Cruise of 1907 ? 1909 tested the seakeeping of the U.S. designs . Even the earlier designs , including the Connecticut class with their higher freeboard , carried their secondary armament too close to the waterline . The ships initially carried a pole mast above the conning tower , though shortly after commissioning , both ships had lattice masts added aft , and in 1910 , the forward masts were also replaced with lattice masts .

The reduced length while retaining the same beam as the prior Connecticut class resulted in a disadvantageous length @-@ to @-@ beam ratio , causing reduced performance relative to that class . Not only was their top speed a knot slower , but also their economical speed was reduced by one and half knots . They also had 25 % less coal storage , further reducing their operating range .

The Mississippi ships had poor seakeeping qualities , making them poor gunnery platforms underway in Atlantic waters . Their motion was irregular , and their low length @-@ to @-@ beam ratio caused excessive rolling and pitching , which made it difficult to keep the guns on target . The reduced length , significantly cut away from the aft , made it difficult to keep the ships on a

consistent course , even in smoother waters .

= = Ships = =

= = = USS Mississippi (BB @-@ 23) = = =

The second Mississippi (Battleship No. 23) was laid down in 1904 , launched in 1905 , and commissioned in early 1908 , She was given a shakedown cruise off the coast of Cuba in 1908 , then returned to Philadelphia for final fitting out .

In early 1909 , she attended the inauguration of the President of Cuba , met the Great White Fleet upon its return , and was reviewed by the President . For the remainder of the year and into 1910 , she traveled the waters off New England , the Caribbean , and the Gulf of Mexico , took a voyage up the Mississippi River , and participated in war games out of Guantanamo Bay .

In late 1910 , she sailed to Europe as part of Atlantic Fleet maneuvers , following which she spent about 14 months off the Atlantic coast , based alternately in Philadelphia and Norfolk , serving as a training ship and conducting operational exercises . In June 1912 , she landed a Marine detachment at El Cuero , Cuba , to protect American interests . Following exercises with the fleet , she returned to Philadelphia Navy Yard , where she was put in the First Reserve in August 1912 .

In late 1913 , she was assigned duty as an aeronautic station ship at Pensacola , Florida . With the outbreak of fighting in Mexico in April 1914 , Mississippi sailed to Veracruz , arriving with the first detachment of naval aviators to go into combat . In June 1914 she returned to Hampton Roads , where in July she was decommissioned and transferred to the Greek Navy .

= = = USS Idaho (BB @-@ 24) = = =

The second Idaho (Battleship No. 24) was laid down in 1904 , launched in 1905 , and commissioned in mid @-@ 1908 . She was given shakedown cruise off the coast of Cuba in 1908 , then returned to Philadelphia for final fitting out and repairs .

In the summer of 1908 , she transported a detachment of marines to Colon in the Canal Zone to support a peaceful election process .

In early 1909 , she met the Great White Fleet upon its return to the U.S. and was reviewed by the President . For the remainder of the year and into 1910 , she alternated between the waters off New England and southern waters , including the Caribbean and the Gulf of Mexico , along with a voyage in the Mississippi River and war games out of Guantanamo Bay .

In late 1910 , she sailed across the Atlantic with the Third Division of the Atlantic Fleet to Gravesend Bay , England , and then to Brest , France , returning to Guantanamo Bay in early 1911 .

After routine service with the Atlantic Fleet and in Cuban waters , Idaho toured Gulf of Mexico and the Mississippi River in 1911 , visiting many ports on the Mississippi River .

In February 1913 , unrest in Mexico led to a coup d'état and the death of deposed President Francisco I. Madero . For the protection of American interests , Idaho deployed to Tampico in May and to Veracruz in June . Upon returning , she was placed in the Atlantic Reserve Fleet on October 27 , 1913 .

Idaho remained in reserve until recommissioned at Philadelphia in March 1914 . In mid @-@ year , she steamed to the Mediterranean with a group of midshipmen on board . After visiting several ports , she arrived at the French port of Villefranche on July 17 , 1914 . There , she was formally transferred to the Greek Navy on July 30 , 1914 .

= = = Greek service = = =

Diplomatic tensions between Greece and the Ottoman Empire following the 1912 ? 13 Balkan Wars resulted in each seeking to buy powerful warships abroad that would enable them to control the

Aegean Sea . Idaho and Mississippi were sold on July 8 , 1914 , to Fred J. Gauntlett , an intermediary , who in turn sold them to the Greek government . The proceeds of the sale were used to increase the budget for the 1915 fiscal year , funding the building of a third New Mexico @-@ class super @-@ dreadnought , Idaho (BB @-@ 42) .

Mississippi was renamed Kilkis for the crucial battle of the Second Balkan War , while Idaho became Limnos in honor of a victorious naval battle over the Turkish Navy during the First Balkan War . Though their service was uneventful , these ships served to balance German capital ships which were acquired by rival Turkey . The design limitations and poor seakeeping tendencies were not as critical in that strategic environment and the calmer seas of the Mediterranean . U.S. Ambassador to Turkey Henry Morgenthau , Sr. wrote , " Those battleships immediately took their places as the most powerful vessels of the Greek Navy , and the enthusiasm of the Greeks in obtaining them was unbounded . "

= = = = World War I = = = =

In 1916 , a serious division in the Greek government developed between King Constantine I and Prime Minister Eleftherios Venizelos over whether Greece should enter World War I. This became known as the " National Schism " , where separate governments emerged . Defections by units of the Greek Navy to the Venizelist factions provoked a Royalist purge of Venizelist officers and men from the Greek Navy . French Admiral Fournet , the Commander in Chief of the Allied Squadron , perceived the Greek fleet as a menace to the Entente powers in the Aegean . He delivered an ultimatum to the Greeks to sequester the small ships and disable the large ones . On October 19 , 1916 , the breech blocks , munitions , and torpedoes were removed from Limnos and Kilkis . At the same time , the crews were reduced to one @-@ third of normal size .

In June 1917 , Greece was reunified under Venizelos and declared war against the Central Powers . Restoration of the Greek Navy was slow due to British and French disagreements and the difficulty in guaranteeing the officers and crews would support a war against the Central Powers . When France returned the ships , Limnos and Kilkis took part in Allied operations in the Aegean . The greatest Allied need in the Mediterranean was for antisubmarine units , thus battleships were not a priority .

After World War I , both ships saw action in 1919 under the command of Rear Admiral G. Kakoulidis , RHN , when the Greek Navy took part in the Allied expedition in support of Denikin 's White Armies in the Ukraine .

= = = = Later careers = = = =

The ships were also active in the operations of the Greco @-@ Turkish War in Asia Minor from 1919 to 1922 . As the Greeks had been on the winning side in World War I and the Ottoman Empire was one of the defeated powers , the Greeks were awarded large areas of mixed Turkish and Greek populations on the Asian coast of the Aegean Sea . On May 15 , 1919 , 20 @,@ 000 Greek soldiers landed in Smyrna and took control of the city and its surroundings under cover of the Greek , French , and British navies . Limnos was the flagship to the Second Fleet , based in Smyrna , under Rear Admiral G. Kalamidas ; her mission was surveillance of the Black Sea , Dardanelles , and Asia Minor coasts . Over time , France and Italy became supportive of the emerging Turkish republic . Britain remained supportive of Greece , but opposed Greek moves against Istanbul in 1922 . With waning support , the Greek army was defeated , and Greece was driven out of Asia by the Turks in late 1922 , resulting in years of political and economic turmoil .

Both battleships were relegated to reserve and auxiliary roles in the mid @-@ 1930s . Kilkis , which had been upgraded in the mid @-@ 1920s , became a naval artillery training facility in 1932 . Limnos ' guns were removed and installed in a coastal defense battery on the island of Aegina . While they were both anchored in the Salamis Naval Base on April 23 , 1941 , both ships were sunk during the German invasion of Greece by Junkers Ju 87 Stuka dive bombers . Kilkis was hit by bombs and went down in shallow water at her moorings ; Limnos was also hit , but was able to get

underway enough to be beached . The wrecks were refloated and sold for scrap in the 1950s .