

= Nassau @-@ class battleship =

The Nassau class were a group of four German dreadnought battleships built for the Imperial Navy . They were the German response to the introduction of the " all big gun " British HMS Dreadnought . The class was composed of Nassau , Rheinland , Posen , and Westfalen . All four ships were laid down in mid @-@ 1907 , and completed between May and September 1910 . Compared to their British contemporaries , the Nassau @-@ class ships were lighter and had a wider beam . They were two knots slower , because the German ships retained vertical triple @-@ expansion engines as opposed to the high @-@ power turbine engines adopted by the British . The ships also carried smaller main guns ? 11 @-@ inch ( 280 mm ) guns rather than the 12 @-@ inch ( 305 mm ) guns mounted on the British ships .

After their commissioning into the German fleet , all four ships served as a unit : the II Division of I Battle Squadron . Two of the ships , Nassau and Posen , took part in the inconclusive Battle of the Gulf of Riga in 1915 , during which they engaged the Russian pre @-@ dreadnought Slava . The Nassau @-@ class ships took part in the Battle of Jutland on 31 May and 1 June 1916 as the II Battle Squadron ; they suffered only a handful of secondary battery hits and limited casualties . At the end of the First World War , the four ships were seized as war prizes by the victorious Allied powers and sold for scrapping .

= = Design = =

= = = Development = = =

In 1906 , the launch of the " all big gun " HMS Dreadnought made all other battleships then in existence obsolete . The First Naval Amendment to the 1900 German Naval Law was passed in 1906 prior to the launch of Dreadnought ; Admiral Alfred von Tirpitz had originally requested six new battleships and six armored cruisers , along with a number of miscellaneous smaller craft . The launch of the revolutionary Dreadnought meant that any future battleships that could compete with her would be significantly more expensive than the older pre @-@ dreadnought battleships . Opposition to budget increases in the Reichstag forced Tirpitz to reduce his request to six armored cruisers ? one of which was to have been placed in reserve ? and 48 torpedo boats , dropping his request for new battleships completely ; the reduced proposal was voted through on 19 May 1906 . A week after the amendment was passed , funds for two 18 @,@ 000 @-@ ton battleships and a 15 @,@ 000 @-@ ton armored cruiser were allocated to the Navy . Funds were also provided to widen the Kaiser Wilhelm Canal and enlarge dock facilities to accommodate the larger ships .

A debate ensued in the Reichsmarineamt ( Naval Office ) over the construction of the new ships . Tirpitz favored following the Royal Navy by building dreadnought battleships and battlecruisers as well . Tirpitz saw it as an opportunity to break Britain 's commitment to the " two power standard " . Tirpitz also intended to use the funds that had been allocated for armored cruisers to build battlecruisers instead , although they were still to be classified as armored cruisers .

Nassau and Westfalen were the first dreadnoughts ordered under the 1906 ? 07 program ; the armored cruiser Blücher was ordered along with them . The Second Naval Amendment to the 1900 Naval Law was passed on 27 March 1908 ; this amendment included a budget of 1 billion marks , and provisions that reduced the lifespan of battleships from 25 years to 20 . This had the effect of necessitating the replacement of the coastal defense ships of the Siegfried and Oldenburg classes , as well as the pre @-@ dreadnoughts of the Brandenburg class . The Sachsen @-@ class ironclads ( first put into service in the late 1870s ) also needed replacement , as they were already obsolete , even under the 25 @-@ year standard . The four Saxsens were to be replaced by the Nassau class . The second pair of ships in the Nassau class , Posen and Rheinland , were ordered under the 1907 ? 08 building program .

= = = General characteristics = = =

The ships were 146 @. @ 1 m ( 479 ft 4 in ) long , 26 @. @ 9 m ( 88 ft 3 in ) wide , and had a draught of 8 @. @ 9 m ( 29 ft 2 in ) . The ships had a length to width ratio of 5 @. @ 45 , which was somewhat " stubby " compared to contemporary designs . To some extent , the greater than normal width was due to the four wing turrets , which necessitated a wider hull . They displaced 18 @, @ 873 tonnes ( 18 @, @ 575 long tons ) with a standard load , and 20 @, @ 535 t ( 20 @, @ 211 long tons ) fully laden . The ships had 19 watertight compartments , with the exception of Nassau , which only had 16 . All four ships had a double bottom for 88 percent of the keel . The ships carried a number of boats , including a picket boat , 3 admiral 's barges , 2 launches , 2 cutters , and 2 dinghies .

As designed , the ships did not handle particularly well , even in calm seas , and their motion was quite stiff . The ships experienced severe rolling , due to the weight of the wing turrets . The heavy wing turrets caused the ships to have a large metacentric height , which should have made them very stable gun platforms , but their roll period proved to coincide with that of the average North Sea swell . Bilge keels were later added , which helped to improve the rolling problem . Despite the tendency to roll , the Nassau @-@ class ships were maneuverable and had a small turning radius . They suffered minor speed loss in heavy seas , but up to 70 percent at hard rudder . The roll keels that had been fitted to improve handling caused a portion of the speed loss at hard rudder .

#### = = = Propulsion = = =

The Imperial German Navy was slow to adopt the advanced Parsons turbine engines used in the British Dreadnought , primarily due to the resistance of both Admiral von Tirpitz and the Navy 's construction department . In 1905 , the latter stated that the " use of turbines in heavy warships does not recommend itself . " The Nassau class therefore retained obsolete vertical triple expansion engines rated at 18 @, @ 615 ihp ( 13 @, @ 881 kW ) . Each of the three shafts drove a 3 @-@ bladed screw that was 5 m ( 5 @. @ 46 yd ) in diameter . Designed top speed was 19 @. @ 5 knots ( 36 @. @ 1 km / h ; 22 @. @ 4 mph ) . On trials , the ships attained 20 to 20 @. @ 2 knots ( 37 @. @ 0 to 37 @. @ 4 km / h ; 23 @. @ 0 to 23 @. @ 2 mph ) on 25 @, @ 885 ? 27 @, @ 732 ihp ( 19 @, @ 302 ? 20 @, @ 680 kW ) . By comparison , Dreadnought 's steam turbines provided a rated speed of 21 knots ( 39 km / h ; 24 mph ) .

Steam was provided by 12 Schulz @-@ Thornycroft boilers , each of which had 2 fireboxes , for a total of 24 . The machinery was divided into three engine and six boiler rooms . The wing turrets and their magazines further divided the machinery into three separated groups , thereby increasing survivability . The ships carried 2 @, @ 700 tons of coal , and were later modified to carry an additional 160 tons of oil that was to be sprayed on the coal , to increase its burn rate . Electrical power was provided by eight turbo @-@ generators , producing 1 @, @ 280 kW at 225 V .

#### = = = Armament = = =

The vertical triple expansion engines consumed large amounts of internal space that could otherwise have been used for magazines . Without sufficient magazine capacity to support superfiring centerline turrets , designers were compelled to distribute six main turrets in an unusual hexagonal configuration . Two twin turrets were mounted fore and aft ( one on each end ) , and two were mounted on each flank of the ship . Firing directly forward and aft , the ships could bring 6 guns to bear , and 8 on the broadside ; this was the same theoretical capability as Dreadnought , but the Nassau @-@ class ships required two additional guns to achieve it . It was considered that this arrangement provided a useful reserve of heavy guns that were shielded from enemy fire .

Each ship carried twelve 28 cm ( 11 in ) SK L / 45 guns . The wing turrets were Drh LC / 1906 mounts , as were the centerline turrets on the first two ships of the class , Nassau and Westfalen . Posen and Rheinland carried their centerline guns in Drh LC / 1907 turrets , which had a longer trunk than the LC / 1906 design . The Drh LC / 1906 turrets and 11 @-@ inch SK / L45 guns were designed specifically for the new German dreadnoughts in 1907 . Both mountings allowed for

elevation up to 20 degrees , but the LC / 1907 mounts could depress an additional two degrees , down to ? 8 . The main battery propellant magazines were placed above shell rooms , with the exception of the centerline turrets of Nassau and Westfalen . These guns fired 666 lb shells , with a 57 lb ( 26 kg ) fore propellant charge in silk bags and a 174 lb ( 79 kg ) main charge in a brass case . The guns fired the shells at a muzzle velocity of 2 @, @ 805 ft / s ( 855 m / s ) , and had a maximum range of 22 @, @ 400 yards ( 20 @, @ 500 m ) . At a range of 13 @, @ 100 yards ( 12 @, @ 000 m ) , the 11 in shells would penetrate up to 7 @. @ 9 in ( 200 mm ) of belt armor .

The ships ' secondary armament consisted of twelve 15 cm ( 5 @. @ 9 in ) SK L / 45 guns , which were mounted in casemates . The guns fired 99 @. @ 9 lb shells at a muzzle velocity of 2 @, @ 740 ft / s ( 835 m / s ) . The guns could be elevated to 19 degrees , which provided a maximum range of 16 @, @ 350 yards ( 14950 m ) . The ships also carried sixteen 8 @. @ 8 cm ( 3 @. @ 5 in ) SK L / 45 guns , also in casemates . These guns fired a 22 @- @ lb projectile at 2 @, @ 133 ft / s ( 650 m / s ) , and could be trained up to 25 degrees for a maximum range of 10 @, @ 500 yards ( 9 @, @ 600 m ) . After 1915 , two 8 @. @ 8 cm guns were removed and replaced by two 8 @. @ 8 cm Flak guns , and between 1916 and 1917 , the remaining twelve 8 @. @ 8 cm casemated guns were removed . These anti @- @ aircraft guns fired a slightly lighter 21 @. @ 2 lb shell at 2 @, @ 510 ft / s ( 765 m / s ) . They could be elevated to 45 degrees and could hit targets 12 @, @ 900 yards ( 11 @, @ 800 m ) away . The Nassau @- @ class ships were also armed with six 45 cm ( 18 in ) submerged torpedo tubes . One tube was mounted in the bow , another in the stern , and two on each broadside , on either ends of the torpedo bulkhead .

== = Armor == =

The Nassau @- @ class ships were equipped with Krupp cemented steel armor . The ships had an armored belt that was 30 cm ( 12 in ) thick at its strongest , where it protected the ship 's vitals in the center , and as thin as 8 cm ( 3 @. @ 1 in ) in less critical areas , such as the bow and stern . Behind the main belt was a torpedo bulkhead 3 cm ( 1 @. @ 2 in ) thick ; there was some difficulty mounting the torpedo bulkhead , due to the four wing turrets and their barbettes . The ships ' decks were armored , between 5 @. @ 5 ? 8 cm ( 2 @. @ 1 ? 3 @. @ 1 in ) thick . The forward conning tower had a roof that was 8 cm ( 3 @. @ 1 in ) thick , and sides 40 cm ( 16 in ) thick . The aft conning tower was less well protected , with a 5 cm ( 2 @. @ 0 in ) thick roof and 20 cm ( 7 @. @ 9 in ) sides . The main battery turrets had roofs that were 9 cm ( 3 @. @ 5 in ) thick , and 28 cm ( 11 in ) sides . The casemated secondary battery had 16 cm ( 6 @. @ 3 in ) worth of armor protection , and 8 cm thick gun shields . The ships were also fitted with anti @- @ torpedo nets , but these were removed after 1916 .

== Construction ==

Four ships of the class were ordered , under the provisional names Ersatz Bayern , Ersatz Sachsen , Ersatz Württemberg , and Ersatz Baden , as replacements for the four old Sachsen @- @ class ironclads . The first ship of the class , Nassau , was laid down on 22 July 1907 at the Kaiserliche Werft in Wilhelmshaven , launched on 7 March 1908 , and commissioned into the fleet on 1 October 1909 . Westfalen was laid down less than a month later , on 12 August 1907 at the AG Weser shipyard in Bremen . The ship was launched on 1 July 1908 , and commissioned on 16 November 1909 .

Rheinland , the third ship of the class , was actually the first to be laid down , on 1 June 1907 in the AG Vulcan shipyard in Stettin . Construction of Rheinland proceeded slower than Nassau and Westfalen , and so the ship was launched later , on 26 September 1908 . Rheinland joined the fleet on 30 April 1910 . Posen , the last ship of the class , was laid down at the Germaniawerft shipyard in Kiel on 11 June 1907 . The ship was not launched until 12 December 1908 , and did not join her sisters until 31 May 1910 .

== = Ships == =

= = Service history = =

The Nassau @-@ class ships operated as a unit in the High Seas Fleet : the II Division of the I Battle Squadron . The ships of the class participated in a number of fleet operations in the North Sea , including the action on 31 May 1916 that resulted in the Battle of Jutland . The ships also saw limited service in the Baltic Sea , including the abortive Battle of the Gulf of Riga in August 1915 .

= = = Battle of the Gulf of Riga = = =

In August 1915 , the German fleet attempted to clear the Gulf of Riga , in order to facilitate the capture of Riga by the German army . To do so , the German planners intended to drive off or destroy the Russian naval forces in the gulf , which included the pre @-@ dreadnought Slava and a number of gunboats and destroyers , and lay a series of minefields in the northern entrance to the gulf . The fleet that assembled to assault the gulf included the four Nassau @-@ class ships , the four Helgoland @-@ class battleships , and the battlecruisers Von der Tann , Moltke , and Seydlitz . The eight battleships were to provide cover for the forces engaging the Russian flotilla . The first attempt on 8 August was unsuccessful , as it had taken too long to clear the Russian minefields to allow the minelayer Deutschland to lay a minefield of her own .

On 16 August , a second attempt was made to enter the gulf : Nassau and Posen , four light cruisers , and 31 torpedo boats breached the defenses to the gulf . On the first day of the assault , the German minesweeper T46 was sunk , as was the destroyer V99 . On 17 August , Nassau and Posen engaged in an artillery duel with Slava , resulting in three hits on the Russian ship that prompted her withdrawal . After three days , the Russian minefields had been cleared , and the flotilla entered the gulf on 19 August , but reports of Allied submarines in the area prompted a German withdrawal from the gulf the following day .

= = = Battle of Jutland = = =

The ships took part in the inconclusive Battle of Jutland on 31 May ? 1 June 1916 . For the majority of the battle , the I Battle Squadron formed the center of the line of battle , behind Rear Admiral Behncke 's III Battle Squadron , and followed by Rear Admiral Mauve 's elderly pre @-@ dreadnoughts of the II Battle Squadron . Posen served as the division flagship , under the command of Rear Admiral W. Engelhardt .

At around midnight on 1 June , Nassau came in contact with the British destroyer Spitfire , and in the confusion , attempted to ram her . Spitfire tried to evade , but could not maneuver away fast enough , and the two ships collided . Nassau fired her forward 11 @-@ inch guns at the destroyer , but they could not depress low enough for Nassau to be able to score a hit . Nonetheless , the blast from the guns destroyed Spitfire 's bridge . At that point , Spitfire was able to disengage from Nassau , and took with her a 20 @-@ foot ( 6 m ) portion of Nassau 's side plating . The collision disabled one of her 5 @-@ 9 @-@ inch guns , and left an 11 @-@ 5 @-@ foot ( 3 @-@ 5 m ) gash above the waterline ; this slowed the ship to 15 knots until it could be repaired . At approximately the same time , Posen accidentally rammed the light cruiser Elbing and holed her below the waterline . Elbing was damaged so severely that her engine room was completely flooded and she was unable to move ; the captain of the ship ordered Elbing be scuttled to prevent her capture by the British .

Shortly after 01 : 00 , Nassau and Thüringen encountered the British armored cruiser Black Prince . Thüringen opened fire first , and pummeled Black Prince with a total of 27 heavy @-@ caliber shells and 24 shells from her secondary battery . Nassau and Ostfriesland joined in , followed by Friedrich der Grosse .

[ Black Prince ] presented a terrible and awe @-@ inspiring spectacle as she drifted down the line blazing furiously until , after several minor detonations , she disappeared below the surface with the whole of her crew in one tremendous explosion .

The wreck of the ship was directly in the path of Nassau ; to avoid it , the ship had to steer sharply towards the III Battle Squadron . It was necessary for the ship to steam at full speed astern in order to avoid a collision with Kaiserin . Nassau then fell back into a position between the pre @-@ dreadnoughts Hessen and Hannover .

Following the return to German waters , Nassau , Posen , and Westfalen , along with the Helgoland @-@ class battleships Helgoland and Thüringen , took up defensive positions in the Jade roadstead for the night . The Nassau @-@ class ships suffered only a handful of secondary battery hits from the opposing Grand Fleet ; Nassau was hit twice , Westfalen and Rheinland each once , and Posen escaped completely unscathed . Not a single ship of the four was struck by a heavy @-@ caliber shell .

= = = Later operations = = =

Less than three months after Jutland , Westfalen was torpedoed by the British submarine HMS E23 on 19 August 1916 , but suffered minimal damage and was soon repaired . In 1918 , Westfalen and Rheinland were detached from the High Seas Fleet and ordered into the Baltic Sea . Finland was revolting against Russian rule , and the two ships were to aid the Finns in the civil war . On 11 April at approximately 07 : 30 , Rheinland ran aground off the Åland Islands . Approximately 6 @,@ 000 tons of guns , belt armor , and coal were removed in order to lighten her enough to be refloated , which was not accomplished until 9 July . Rheinland was never repaired , and instead saw the remainder of her service as a barracks ship in Kiel .

Following the end of the First World War in 1918 , eleven battleships of the König , Kaiser , and Bayern classes and all five battlecruisers , along with a number of light cruisers and destroyers , were interned in Scapa Flow , while their fate was determined in the negotiations over the Treaty of Versailles . The Nassau and Helgoland @-@ class battleships were left in Germany . Following the scuttling of the German fleet in June 1919 , all four ships were allotted to the victorious Allied powers as replacements for the scuttled ships . Nassau was ceded to Japan , Britain received Westfalen and Posen , and Rheinland was sold directly to the breakers at Dordrecht . Between 1920 and 1924 , Westfalen was scrapped at Birkenhead and the remaining ships were scrapped at Dordrecht .