

= French battleship *Léna* =

Léna was a pre-dreadnought battleship of the French Navy . The ship 's keel was laid in 1898 and she was completed four years later . Her design was derived from the preceding *Charlemagne* class battleships with a heavier secondary battery and thicker armour . She retained the tumblehome characteristic of all large French warships of this period that caused stability issues . Upon completion *Léna* was assigned to the Mediterranean Squadron and remained there for the duration of her career . She participated in the annual fleet manoeuvres and made many visits to French ports in the Mediterranean .

While docked for repairs , *Léna* was gutted on 12 March 1907 by a magazine explosion caused by the decomposition of well aged " Powder B " propellant . While it was possible to repair her , the ship was not thought worth the time or expense . Her hulk was used as a gunnery target before it was sold for scrap in 1912 .

= Design =

Léna was designed at the request of the Board of Construction (French : Conseil des travaux) to follow the *Charlemagne* class ships whose seakeeping qualities were not entirely satisfactory . But Constructor Thibaudier just modified the *Charlemagne* 's design with a heavier secondary battery and thicker armour , distributed in a slightly different manner . This increased her displacement by 700 tonnes (690 long tons) in comparison to the older ships and she retained the pronounced tumblehome that was the cause of the stability problems .

= General characteristics =

The *Léna* was longer than her predecessors , at 122 @ 35 metres (401 ft 5 in) overall . She had a beam of 20 @ 83 metres (68 ft 4 in) and , at deep load , a draught of 7 @ 45 metres (24 ft 5 in) forward and 8 @ 45 metres (27 @ 7 ft) aft . She was only slightly heavier than the *Charlemagne* class and displaced 11 @, 688 metric tons (11 @, 503 long tons) normally , and 12 @, 105 metric tons (11 @, 910 long tons) at full load , 700 metric tons more than the earlier ships .

Léna was fitted with large bilge keels , but was reported to roll considerably and pitch heavily , although this is contradicted by the ship 's captain 's report of November 1905 : " From the sea @-keeping point of view the *Léna* is an excellent ship . Pitching and rolling movements are gentle and the ship rides the waves well . "

= Propulsion =

Léna used three vertical triple expansion steam engines built by Les Forges et Chantiers de la Méditerranée , one engine per shaft . Each shaft drove a three @-bladed propeller that was 4 @ 5 metres (14 ft 9 in) in diameter on the wing shafts and 4 @ 4 metres (14 ft 5 in) in diameter on the center shaft . The engines were powered by twenty Belleville water @-tube boilers at a working pressure of 18 kg / cm² (1 @, 765 kPa ; 256 psi) . The engines were rated at a total of 16 @, 500 indicated horsepower (12 @, 300 kW) and produced 16 @, 590 ihp (12 @, 370 kW) during the ship 's sea trials . *Léna* reached a top speed of 18 @ 11 knots (33 @ 54 km / h ; 20 @ 84 mph) on her trials . She carried a maximum of 1 @, 165 tonnes (1 @, 147 long tons) of coal which allowed her to steam for 4 @, 500 nautical miles (8 @, 300 km ; 5 @, 200 mi) at a speed of 10 knots (19 km / h ; 12 mph) . The ship 's 80 @-volt electrical power was provided by 600 @-ampere and 1200 @-ampere dynamos .

= Armament =

Like the *Charlemagne* class which preceded her , *Léna* carried her main armament of four 305 mm (

12 in) , 40 @-@ calibre Canon de 305 mm Modèle 1893 / 96 guns in two twin @-@ gun turrets , one each fore and aft . The guns fired 340 @-@ kilogram (750 lb) projectiles at the rate of 1 round per minute at a muzzle velocity of 780 m / s (2 @,@ 600 ft / s) . This gave a range of 12 @,@ 000 metres (13 @,@ 000 yd) at the maximum elevation of 15 ° . The magazines stored 180 shells per gun , enough for three hours of fighting .

The ship 's secondary armament consisted of eight 45 @-@ calibre Canon de 164 mm Modèle 1893 guns , which were mounted in individual casemates . The guns fired 164 @.@ 7 mm (6 @.@ 48 in) , 52 @-@ kilogram (115 lb) shells at a muzzle velocity of 865 m / s (2 @,@ 840 ft / s) to a maximum range of 9 @,@ 000 metres (9 @,@ 800 yd) . A total of 1606 rounds were carried , enough for three hours of fighting at the practical 1 ? 2 rounds per minute per gun . Léna also carried eight 100 mm (3 @.@ 9 in) , 45 @-@ calibre Canon de 100 mm Modèle 1893 guns in shielded mounts on the shelter deck . These guns fired a 12 @-@ kilogram (26 lb) projectile at 710 m / s (2 @,@ 300 ft / s) , which could be trained up to 20 ° for a maximum range of 9 @,@ 500 metres (10 @,@ 400 yd) . Their theoretical maximum rate of fire was six rounds per minute , but only three rounds per minute could be sustained . 2074 shells were carried to ensure three hours of fire . The guns were 6 @.@ 26 metres (20 ft 6 in) above the waterline .

Léna 's anti @-@ torpedo boat defences consisted of 16 47 mm (1 @.@ 9 in) 40 @-@ calibre Canon de 47 mm Modèle 1885 Hotchkiss guns , fitted in platforms on both masts and on the superstructure . They fired a 1 @.@ 49 @-@ kilogram (3 @.@ 3 lb) projectile at 610 m / s (2 @,@ 000 ft / s) to a maximum range of 4 @,@ 000 metres (4 @,@ 400 yd) . Their theoretical maximum rate of fire was fifteen rounds per minute , but only seven rounds per minute sustained . 15 @,@ 000 shells were kept in the magazines . Admiral Marquis criticized the arrangements for the 47 mm guns in a 1903 report :

The number of ready @-@ use rounds is insufficient and the hoists are desperately slow . The 47 mm guns , much more so than the large and medium @-@ calibre guns , will have to fight at night ; yet these are the only guns without a fire @-@ control system designed for night operations . This is a deficiency which needs to be corrected as soon as possible .

Léna mounted four 450 @-@ millimetre (18 in) torpedo tubes . Two tubes were submerged and the other two were above the waterline . Twelve Modèle 1889 torpedoes were carried , of which four were training models .

== = Armour == =

Léna had a complete waterline armour belt of Harvey armour that was 2 @.@ 4 metres (7 ft 10 in) high and tapered from the maximum thickness of 320 mm (12 @.@ 6 in) that covered 84 metres (275 ft 7 in) amidships to 230 mm (9 @.@ 1 in) at the ship 's ends . The lower edge of this belt was a uniform 120 mm (4 @.@ 7 in) in thickness . The upper armour belt was in two strakes , the lower 120 mm thick and the upper 80 mm (3 @.@ 1 in) . Their combined height was 2 metres (6 ft 7 in) amidships . The maximum thickness of the armoured deck was 80 mm and the fore and aft armoured transverse bulkheads were 90 mm (3 @.@ 5 in) thick . The main turret armour ranged from 278 ? 318 mm (10 @.@ 9 ? 12 @.@ 5 in) in thickness with a 50 mm (2 @.@ 0 in) roof and the ammunition shafts were protected by 250 mm (9 @.@ 8 in) of armour . The casemates for the 164 mm guns were 90 mm thick and their ammunition tubes had 200 mm (7 @.@ 9 in) of armour .

The conning tower face had 298 mm (11 @.@ 7 in) of armour and its sides were 250 mm thick . Its roof was protected by two layers of armour , each 25 mm (0 @.@ 98 in) thick . The communications tube was protected by 200 mm of armour .

== History ==

Léna was laid down at Brest on 15 January 1898 after being authorized on 3 April 1897 . She was launched on 1 September 1898 , but did not enter service until 14 April 1902 . Léna was assigned to the Second Division of the Mediterranean Squadron and sailed for Toulon five days later . En route , the ship suffered from a number of problems with her rudder and had to be docked for repairs once

she arrived at her destination . After the completion of the repairs the ship began a series of port visits in France and French North Africa which would be repeated for most of her career . Léna participated in the fleet review off Naples in April ? May 1904 on the occasion of the visit of the President of France with King Victor Emmanuel III of Italy . Afterwards , the Mediterranean Squadron cruised the Levant , calling in Beirut , Suda Bay , Smyrna , Mytilene , Salonika and Piraeus . In April 1906 , she was dispatched to provide assistance to Naples after the eruption of Mount Vesuvius .

= = = Loss = = =

On 4 March 1907 Léna was moved into dry dock No. 2 in the Missiessy Basin at Toulon to undergo maintenance of her hull as well as inspection of her rudder shaft . Eight days later , beginning at 1 : 35 a.m. and continuing until 2 : 45 , a series of explosions began in the port No. 5 100 @-@ millimetre magazine of the Léna which devastated the ship and the surrounding area . Because the ship was in a dry dock it was initially impossible to flood the magazines . The commanding officer of the battleship Patrie , which was moored nearby , fired a shell into the gate of the dry dock in an attempt to flood it , but the shell ricocheted without holing the gate . The dock was finally flooded when Ensign de Vaisseau Roux (who was killed shortly afterward by fragments from the ship) managed to open the sluice gates . The French battleship Suffren , moored in the No. 1 dock beside the Léna , almost capsized under the strength of the blasts .

The origin of the first explosion was traced to Powder B , a nitrocellulose @-@ based propellant used in the ammunition , which tended to become unstable with age , and self @-@ ignite . It was estimated that 80 % of the contents of the ship 's magazines were the suspect powder at the time of the accident . The explosion and loss of 120 lives , including two civilians killed by fragments in the suburb of Le Pont Du Las , triggered a major scandal , dubbed " the gunpowder scandal " (French : l'affaire des poudres) . As a result , Gaston Thomson , the Navy Minister , was forced to resign . A similar accident later caused the loss of the French battleship Liberté in 1911 .

= = = Disposal = = =

The multiple explosions gutted the superstructure between the mainmast and the rear funnel and collapsed the superstructure surrounding the mainmast . The ship 's side between Frames 74 and 84 was ripped open down to the lower edge of the armour belt and all the machinery in this area was destroyed . After it was estimated that it would take seven million francs and two years to fully repair the Léna it was decided to decommission the ship and use her as a target ship . All useful equipment was removed and she was towed to a mooring off the Île des Porquerolles where she was used as a target to test the effectiveness of the latest design of armour @-@ piercing shells beginning on 9 August 1909 . After the completion of numerous tests , and with the Léna close to foundering , she was towed to deeper water . While under tow Léna capsized and sank on 2 December 1909 . The rights to the wreck were sold and she was subsequently broken up and salvaged between 1912 and 1927 .