

= French battleship Suffren =

Suffren was a pre-dreadnought battleship of the French Navy, launched in July 1899. She was named after French Vice Admiral Pierre André de Suffren de Saint Tropez. The ship was originally intended to be a modified version of the *Léna* design with more firepower and better armour. Before World War I Suffren had an eventful career as she twice collided with French ships and twice had propeller shafts break. She was quickly sent to the Dardanelles after the beginning of the war to reinforce British forces already there.

Suffren joined the British ships in multiple bombardments of the Ottoman fortifications at the mouth of the Dardanelles. She was moderately damaged during the major action of 18 March 1915 and had to be sent to Toulon for repairs. Upon their completion she returned to provide gunfire support for the Allied forces during the Gallipoli Campaign. The ship provided covering fire as the Allies withdrew from the peninsula and accidentally sank one of the evacuation ships. After repairs she was assigned to the French squadron assigned to prevent any interference by the Greeks with Allied operations on the Salonica front. While en route to Lorient for a refit Suffren was torpedoed off Lisbon on 26 November 1916 and sunk with all hands.

= Design and description =

To save time Suffren was only intended to be an updated version of *Léna* with modest improvements in armament and armour, but the number of improvements grew as the project was discussed by the Naval Council (French: Conseil des travaux de la Marine) so that she was essentially a new design, only retaining some of *Léna*'s layout. The biggest changes were the mounting of the bulk of the secondary armament in turrets, rather than *Léna*'s casemates, and the constant thickness of the waterline belt armour compared to *Léna*'s belt which thinned towards the ends of the ship. Stowage of shells for the main armament also increased from 45 to 60 rounds per gun.

= General characteristics =

Suffren was slightly larger than *Léna* being 125.91 metres (413 ft 1 in) long overall. She had a beam of 21.42 metres (70 ft 3 in) and a draft of 7.39 metres (24 ft 3 in) forward and 8.22 metres (27 ft 0 in) aft. She was only slightly heavier than the *Léna* and displaced 12,432 metric tons (12,236 long tons) at normal displacement, and 12,892 metric tons (12,690 long tons) at full load. Suffren was only 3.55 metres (11 ft 8 in) longer and displaced over 700 metric tons (700 long tons) more than the earlier ship. She was fitted with bilge keels to reduce her rolling.

= Propulsion =

Suffren used three Indret vertical triple expansion steam engines, one engine per shaft. The centre shaft drove a three-bladed screw propeller and the wing propellers were four-bladed. Each propeller was 4.39 metres (14 ft 5 in) in diameter. The engines were powered by 24 Niclausse boilers that had a working pressure of 18 kg/cm² (1,765 kPa; 256 psi). The engines were rated at 16,200 indicated horsepower (12,100 kW) and produced 16,809 ihp (12,534 kW) and gave a top speed of 17.91 knots (33.17 km/h; 20.61 mph) on sea trials, just slightly less than her designed speed of 18 knots (33 km/h; 21 mph). The ship carried a maximum of 1,233 metric tons (1,214 long tons) of coal which allowed her to steam for 3,086 nautical miles (5,715 km; 3,551 mi) at a speed of 12 knots (22 km/h; 14 mph). 52.15 metric tons (51.33 long tons) of fuel oil was carried to be sprayed on the coal to improve its burn rate. The ship's 80 V electrical power was provided by two 600-ampere and three 1200-ampere dynamos.

== = Armament == =

Like the *l'Éna* which preceded her, the *Suffren* carried her main armament of four 40 @-@ calibre Canon de 305 mm Modèle 1893 / 96 guns in two twin @-@ gun turrets, one each fore and aft. The guns had a maximum elevation of 15 °. They fired 340 @-@ kilogram (750 lb) projectiles at the theoretical rate of one round per minute. They had a muzzle velocity of 780 metres per second (2 @, @ 600 ft / s) which gave a range of 12 @, @ 000 metres (13 @, @ 000 yd) at maximum elevation. *Suffren* carried 60 rounds for each gun.

The ship's secondary armament consisted of ten 45 @-@ calibre Canon de 164 mm Modèle 1893 guns. Six of these were carried in single turrets on each side of the superstructure and the remaining four were mounted in individual casemates below them on the 1st Deck. The casemates were sponsoned out over the tumblehome of the sides. The guns fired 52 @-@ kilogram (115 lb) shells at a muzzle velocity of 865 metres per second (2 @, @ 840 ft / s) to a maximum range of 9 @, @ 000 metres (9 @, @ 800 yd). Their theoretical rate of fire was between two and three rounds per minute. She carried 1906 shells for these guns. *Suffren* also carried eight 45 @-@ calibre Canon de 100 mm Modèle 1893 guns in shielded mounts on the shelter deck and on the superstructure. These guns fired a 12 @-@ kilogram (26 lb) projectile at 710 metres per second (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 sustained. The ship carried 2264 shells for these guns.

Twenty 50 @-@ calibre Canon de 47 mm Modèle 1885 Hotchkiss guns were mounted as anti @-@ torpedo boat guns. They were mounted in the fighting tops and on the superstructure. They fired a 1 @. @ 49 @-@ kilogram (3 @. @ 3 lb) projectile at 610 metres per second (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. *Suffren* carried 15 @, @ 000 rounds for these 47 @-@ millimetre (1 @. @ 9 in) guns. Two 37 @-@ millimetre (1 @. @ 5 in) Modèle 1885 Hotchkiss guns were mounted on the upper bridge. They fired a shell weighing about .48 kilograms (1 @. @ 1 lb) at a muzzle velocity of about 610 m / s (2 @, @ 000 ft / s) to a range about 3 @, @ 200 metres (3 @, @ 500 yd). Their rate of fire was about 25 rounds per minute.

Four 450 mm (18 in) torpedo tubes were also carried. Two tubes were submerged, abaft the forward turret, and fixed at a 30 ° angle to the beam. The two above @-@ water tubes had a central pivot and limited traverse. Twelve reserve Modèle 1892 torpedoes were carried, of which eight were combat models.

== = Armour == =

Suffren had a complete waterline armour belt of Harvey armour that was 2 @. @ 5 metres (8 ft 2 in) high and 300 millimetres (11 @. @ 8 in) thick. The lower edge of this belt was a uniform 120 millimetres (4 @. @ 7 in) in thickness. The upper armour belt protected the casemates and was 110 millimetres (4 @. @ 3 in) thick. The maximum thickness of the armoured deck was 60 millimetres (2 @. @ 4 in) and the fore and aft armoured transverse bulkheads were 110 mm thick.

The main turret armour was 290 millimetres (11 @. @ 4 in) in thickness with a 50 @-@ millimetre (2 @. @ 0 in) roof and the barbets were protected by 250 mm (9 @. @ 8 in) of armour. The armour for the secondary turrets ranged from 102 millimetres (4 @. @ 0 in) thick at the front to 192 millimetres (7 @. @ 6 in) at the rear. The conning tower had walls 224 ? 274 millimetres (8 @. @ 8 ? 10 @. @ 8 in) thick and its communications tube was protected by 150 millimetres (5 @. @ 9 in) of armour.

== = Construction and service == =

== = Prewar == =

Suffren , named after the French admiral Pierre André de Suffren de Saint -Tropez , was ordered on 21 April 1898 from the Arsenal de Brest . She was laid down on 5 January 1899 and launched on 25 July of the same year . Her fitting out was delayed by late delivery of fittings and armour from July 1900 . Suffren began her sea trials in November 1903 , but was not commissioned until 3 February 1904 . On 18 August 1903 she participated in a gunnery trial with the pre dreadnought Masséna off Île Longue . A mild steel plate 55 centimetres (21 7/8 in) thick , measuring 225 by 95 centimetres (7 ft 5 in by 3 ft 1 in) , was attached to the side of Suffren 's forward turret to determine the resistance of an armour plate to a large 12 in calibre shell . Masséna anchored 100 metres (330 ft) away from Suffren and fired a number of 305 millimetre (12 in) shells at the plate . The first three were training shells that knocked splinters off the armour plate . The last two shells , fired with full charges , cracked the plate , but Suffren 's turret was fully operational , as was her Germain electrical fire control system and the six sheep placed in the turret were unharmed . One splinter struck Masséna above her armour belt and left a 15 centimetre sized hole in her hull . Another 50 kilogram (110 lb) splinter landed within a few metres of the Naval Minister , Camille Pelletan , who was observing the trials .

When Suffren commissioned on 3 February 1904 she was assigned to the Mediterranean Squadron and became the flagship of its commander Vice Admiral Gourdon a few days later on 10 February . In April she carried the President of France , Émile Loubet on a state visit to Naples . As time went by several defects were revealed in service , including the weakness of the underpowered capstan which was barely capable of raising the anchor in waters 15 ? 20 metres (49 ? 66 ft) deep . Another problem was that the centre engine and its propeller shaft tended to overheat excessively . During fleet exercises off the Îles des Hyères on 5 February 1906 Suffren rammed the submarine Bonite when the latter miscalculated the fleet 's movements while manoeuvring into firing position . Bonite rose to periscope depth less than 30 metres (98 ft) in front of Suffren , but the latter managed to turn quickly enough while Bonite was crash diving that Suffren struck Bonite a glancing blow . This was enough , however , to breach two compartments abreast the ship 's starboard engine room and she had to be docked at Toulon for emergency repairs . Bonite 's bow was crushed and several of her ballast tanks were ripped open . Only by rapidly dropping her weighted keel was the submarine able to avoid sinking . No casualties were suffered by either vessel .

During the summer of 1906 Suffren 's above water torpedo tubes were removed . She was drydocked adjacent to Iéna on 12 March 1907 at Toulon when the latter ship 's magazine exploded . Burning fragments started a small fire aboard Suffren , but she was not otherwise damaged by the explosion . In early 1908 a 2 metre (6 ft 7 in) Barr and Stroud rangefinder was mounted on the navigation bridge . During manoeuvres off Golfe Juan on 13 August 1908 the ship 's port propeller shaft broke and the propeller fell off in water 26 metres (85 ft) deep . While a new shaft was ordered from Indret , Iéna 's corresponding shaft was used with such success that the ship 's engineers requested to keep it in place and save the new shaft as a spare . This proposal was rejected by the Naval Ministry and the offending shaft was exchanged . The opportunity was also taken to successfully rework the centre propeller shaft 's mounting so that it would overheat less often . In November 1910 the starboard propeller shaft broke and the propeller was lost in deep water . No shaft was immediately available so Suffren had to wait three months for repairs . In the meantime , however , her boilers were overhauled . On 14 February 1911 the port anchor chain broke , killing one sailor and injuring two others . During another fleet exercise on 28 May 1914 Suffren suddenly lost power and was struck by the battleship Démocratie . She was only lightly damaged with her port anchor and hawsepipe carried away .

== World War I ==

Shortly after the war began Suffren was fitted with additional Barr and Stroud rangefinders near the bridge . Two of these were mounted on transverse rails fore and aft of the bridge . The after bulkhead was removed and the two 100 millimetre (3 9/16 in) guns on the side of the

superstructure were moved one deck lower . On 26 September 1914 Suffren and the battleship *Vérité* were ordered to the Dardanelles to assist British ships in blockading the Dardanelles to prevent any sortie by the German battlecruiser SMS *Goeben* and the light cruiser SMS *Breslau* back into the Mediterranean . On 3 November the two French pre @-@ dreadnoughts joined British ships bombarding the Ottoman fortifications at the mouth of the Dardanelles . The short , eleven @-@ minute , bombardment by the French did little damage , but alerted the Ottomans that their defences there required strengthening . On 16 November Suffren sailed for Toulon for a lengthy refit .

Suffren returned to the Dardanelles on 9 January 1915 and became the flagship of the squadron of four French battleships , commanded by Rear @-@ Admiral Émile Guépratte . She bombarded the Turkish fort of Kum Kale , on the Asian side of the strait on 19 February . Bouvet assisted Suffren by sending firing corrections via radio while Gaulois provided counter @-@ battery fire to suppress the Ottoman coastal artillery . Late in the day the British pre @-@ dreadnought HMS *Vengeance* was bombarding the fort at Orhaniye Tepe on the Asiatic side of the strait and began taking heavy fire as she approached the fort . The British battlecruiser HMS *Inflexible* attempted to suppress the Ottoman coast @-@ defense guns to allow *Vengeance* to extricate herself , but was unsuccessful . Suffren and Gaulois had to combine their fire with that of *Inflexible* before *Vengeance* could successfully withdraw . Suffren fired thirty 305 @-@ millimetre shells and 227 164 @-@ millimetre shells during the day .

Suffren also participated in a more limited way in the bombardment of 25 February against the same targets , but this was far more successful as Suffren and the other ships moved as close as 3 @, @ 000 yards (2 @, @ 700 m) to the forts . On 2 March the French squadron bombarded targets in the Gulf of Saros , at the base of the Gallipoli Peninsula . On 7 March the French squadron attempted to suppress the Turkish guns while British battleships bombarded the fortifications . Admiral Guépratte and his squadron returned to the Gulf of Saros on 11 March where they again bombarded Turkish fortifications .

They returned to assist in the major attack on the fortifications planned for 18 March . British ships made the initial entry into the Dardanelles , but the French ships passed through them to engage the forts at closer range . Shortly after having done so Suffren was under heavy fire and was struck no less than 14 times in 15 minutes . Most did no significant damage , including a 24 @-@ centimetre (9 @. @ 4 in) that bounced off the after 305 @-@ millimetre turret , but one 24 @-@ centimetre shell ricocheted off the port midships 164 @-@ millimetre turret and ripped the roof off the port casemate , killing the entire gun crew . Some flaming debris dropped into that gun 's magazine and started a fire , but it was quickly flooded to prevent an explosion . Another shell tore a hole 80 millimetres (3 @. @ 1 in) across in the bow which flooded the base of the forward turret . While the French Squadron was withdrawing pursuant to Admiral de Robeck 's order Bouvet struck a mine and sank in 55 seconds . Suffren lowered her admiral 's barge , her only intact boat , and rescued 75 men before she had to escort the badly @-@ damaged Gaulois away from the Dardanelles . The latter was taking on water by the bow and had to be beached on one of the Rabbit Islands at the entrance of the Dardanelles before she sank .

Suffren was ordered to escort Gaulois to Toulon via Malta on 25 March . Two days later the ships encountered a storm and were forced to seek refuge in the Bay of Navarin . Suffren arrived at Toulon on 3 April and was repaired by 20 May when she returned to the Dardanelles to provide gunfire support for the troops ashore . She remained in the area until she fired her last mission on 31 December . Upon returning to her anchorage at Kefalos , on the island of Kos , she collided with , and sank , the British steamer *Saint Oswald* , a horse transport involved in the evacuation from Gallipoli , and was badly damaged . Suffren arrived in Toulon on 20 January 1916 for repairs which were done by April . That month she joined the French squadron of six pre @-@ dreadnoughts assigned to prevent any interference by the Greeks with Allied operations on the Salonica front . On 9 July Suffren became flagship of the squadron when *Patrie* departed for a refit at Toulon . On 7 October *Patrie* , *Démocratie* , and Suffren entered the harbour of Eleusina prepared to fire on the Greek pre @-@ dreadnoughts *Kilkis* , *Limnos* and the cruiser *Elli* , but things were resolved peacefully and the French ship returned to their harbour .

Suffren was originally intended to refit at the naval base at Bizerte , but the location was switched

when the dockyard at Lorient informed the Naval Staff that it had room for her . On 15 November the ship departed to recoal at Bizerte which she reached on 18 November . She sailed on 20 November for Gibraltar ; heavy weather en route delayed her arrival until 23 November . Suffren recoaled and departed Gibraltar the following day , without an escort . On the morning of 26 November , roughly 50 nautical miles (92 @. @ 6 km ; 57 @. @ 5 mi) off the Portuguese coast near Lisbon , she was torpedoed by the German submarine SM U @-@ 52 , en route to the Austro @-@ Hungarian naval base at Cattaro . The torpedo detonated a magazine and Suffren sank within seconds , taking her entire crew of 648 with her . U @-@ 52 searched the scene but found no survivors .