

Table S1 Comparative Fleet Strength

Ship	Guns	Crew
France		
Joseph-Francois de Noble du Revest		
L'Hector	74	600
L'Achille	64	400
Le Vaillant	64	400
Le Sage	64	400
Joseph Chevalier de Beaufremont		
Le Tonnant	80	620
Le Defenseur	74	620
Le Diademe	74	600
L'Inflexible	64	400
L'Eveille	64	400
Vice Admiral Dubois de la Motte		
Duc de Bourgogne	80	620
Le Formidable	74	620
Le Superbe	74	520
Le Heros	74	600
Le Glorieux	74	600
Le Dauphin-Royal	70	520
Le Belliqueux	64	400
Le Celebre	64	400
Le Bizarre	64	400
L'Abenaquise	38	320
La Comette	30	240
La Fortune	30	240
La Brune	30	240
Le Fleur de Lys	28	240
L'Hermione	26	220
Total crew (nominal): 10 620		

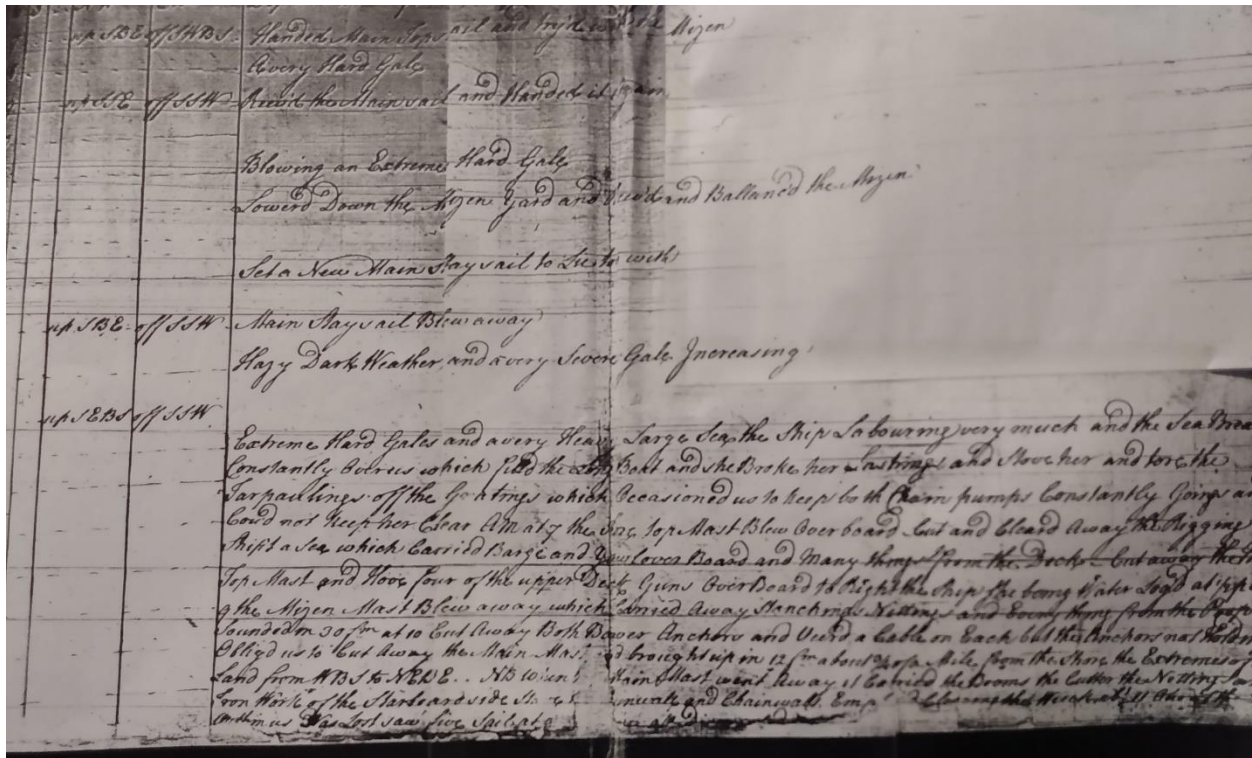
Ship	Guns	Crew
Britain		
Rear Admiral Sir Charles Hardy		
HMS Invincible	74	700
HMS Captain	64	400
HMS Nassau	64	400
HMS Windsor	60	420
HMS Kingston	60	400
HMS Tilbury	58	400
Commodore Charles Holmes		
HMS Terrible	74	600
HMS Grafton	60	535
HMS Eagle	60	420
HMS Somerset	60	520
HMS Centurion	52	350
Vice Admiral Frances Holbourne		
HMS Newark	80	620
HMS Northumberland	70	520
HMS Prince Frederick	70	520
HMS Devonshire	70	500
HMS Bedford	64	400
HMS Defiance	60	420
HMS Orford	60	520
HMS Sunderland	60	400
HMS Lightning	fireship	55
HMS Gibraltar's Prize	sloop	80
HMS Nightingale	fire ship	55
HMS Furnace	14-gun bomb	100
HMS Granada	14-gun bomb	100
HMS Ferret	14-gun sloop	125
HMS Port Mahon	24-gun frigate	220
HMS Hawk	10-gun sloop	90
HMS Hunter	10-gun sloop	90
HMS Cruiser	8-gun sloop	80
Total Crew (nominal): 10 040		

Table S2 Ships of the Line (Specifications)

Comparison of Two Ships of the Line (Third Rates)				
Ship Name	Invincible		Le Tonnant	
Nominal Guns	74		80	
Rig	Ship		Ship	
Navy	Royal Navy		Marine Royale	
Nationality	Great Britain		France	
Length of Gundeck	171' 3" (52.12 m)		179' 0" (54.56 m)	
Length of Keel	139' 0.5" (42.38 m)		164' 1" (49.99 m)	
Breadth	49' 3" (14.94 m)		49' 0" (14.94 m)	
Depth in Hold	21' 3" (6.48 m)		24' 6" (7.47 m)	
Armament	Naval Artillery (GBR)	Individual Gun Weight (kg)	Naval Artillery FR	Individual Gun Weight (kg)
Lower Gun Deck	28 x 32-pounder guns	2845	30 x 36-pounder guns	3250
Upper Gun Deck	30 x 18-pounder guns	1360	32 x 18-pounder guns	2060
Quarterdeck	10 x 9-pounder guns	1448	10 x 6-pounder guns	1445
Forecastle	6 x 9-pounder guns	1448	8 x 6-pounder guns	1445

Ships of the Line at Louisbourg in 1757 *HMS Invincible* and *le Tonnant*. Ships of the line were designed to sail in line past each other in opposite directions while firing heavy artillery at close range. Guns were named for the weight of round shot (cannonballs) which, with a velocity of 487 m/s (1598 ft/s) could penetrate the two feet of solid oak of the enemy ship, tear apart enemy guns and carriages weighing 4 tons, and punch a hole through the other side. Broadships (all guns on one side of a ship fired simultaneously) were measured by weight of iron shot. *Invincible's* weight of broadside was 399 kg compared to *Le Tonnant's* 432 kg. Ships also carried antipersonnel grape or cannister shot that exploded into a shower of iron balls and steel shards and bar or chain shot which spun to destroy masts, spars, sails and rigging. [British Third Rate ship of the line 'Invincible' \(1747\) \(threedecks.org\)](#) and [French Third Rate ship of the line 'Le Tonnant' \(1743\) \(threedecks.org\)](#)

Figure S1 Captain's Log HMS Sunderland (excerpt)



Transposed Excerpt from the Captain's Log of HMS Sunderland for Sunday, September 25, 1757 (above; 6 a.m. to noon, sea day September 25 noting timing of specific storm details)

ADM 51/921 Captain's Log HMS Sunderland (1756 Nov 15–1759 Feb 23), The National Archives, UK, 1757.

Many Royal Navy logbooks at the National Archives (UK) are not in digital format, requiring staff to locate the requested logbook, with entries potentially covering several years and hundreds of pages. After searching for the pertinent pages digital or paper copies may be requested for analysis by researchers. This requires an understanding of historical terminology and the ability to transpose cursive records written at sea with a quill and ink.

Bearing: SEBS

Winds: SSW

Extreme hard gales and a very heavy large sea the ship labouring very much and the sea breaking constantly over us which filled the long boat and she broke her lashings and stove her and tore the tarpaulings [tarpaulins] off the grating which occasioned us to keep the chain pumps continually going and could not keep her clear. A.M. at 7 the fore topmast blew overboard cut and cleared away the rigging. Ship'd a sea which carried barge and yawl overboard and many things from the deck. Cut away the maintopmast and hove four of the upper deck guns overboard

to right the ship she becoming waterlogged. At $\frac{1}{2}$ past 9 the mizen (mizzen) blew away which carried away stanchions, netting and everything from the poop [deck] Sounded on 30 fm [fathoms] at 10. Cut away both bower anchors [starboard and port side bow anchors] and veered a cable on each. Cut the anchors not holding obliged us to cut away the main mast and brought up in 12 fm about $\frac{3}{4}$ of a mile from the shore the extremes of the land from WBS to NEBE..NB when the main mast went away it carried the booms the cutter the netting and iron work of the starboard side ... [missing section] ... chainwalls [chain wales]. Employed clearing the wreck at 11 one of the ships within us was lost saw five sail at anchor all dismasted