

Jock Willis' Specification for the Cutty Sark

SPECIFICATION OF A COMPOSITE SAILING SHIP OF ABOUT 1,300 TONS BUILDERS' MEASUREMENT

1. Dimensions
Deck for measurement of Tonnage
Length 210 ft
Beam Extreme 36 ft
Depth of Hold 20 ft 9
Length of Quarter Deck 45 ft in Main Deck and 4 ft high
Registered Tonnage about 900 Tons under Main Deck and not to exceed 950 tons New National Measurement.
2. Hull Description. The vessel to be ship rigged with Main and Lower Decks laid with a raised Quarter Deck aft 45 ft long and 4 ft high and level with the main rail and Liverpool house fitted on centre 30 ft long with a break 4 ft long on fore part for Captain, Officers and a few passengers as may be arranged for.
Approval of plans to be submitted by builders. Anchor Deck forward, Forecastle fitted below for crew. Small House to be fitted in wake of Foremast for Galley, Petty Officers, etc.
Vessel to be built under special survey and classed at Lloyds for 16 years. Special Survey fees to be paid by owners.
3. Keel. To be of American Rock Elm in long lengths 16-1/2" x 15" and to be scarfed and fastened in accordance with Lloyds' requirements and all through bolts to be of yellow metal.
4. Stem. To be of Teak 15" x 15" in one piece and bolted with yellow metal through bolts in accordance with Lloyd's requirements
5. Sternpost. To be of Teak 16-1/2" x 15" of one piece and through bolted with yellow metal bolts to Lloyds' requirements.
6. Frames. To be of angle iron 3-3/4" x 4-1/2" x 9/16" in one length from keel to Gunwale and of full size and proportions for a vessel of size and tonnage and classified to Lloyds' requirements.
7. Reverse Frames. To be of angle iron 3" x 3" x 7/16" and to be run from the bottom up to the lower and main decks alternately as per Lloyds' rules.
8. Floors. To be 24" deep in centre x 9/16" running well up the bilge, wash plates of iron to be properly fitted and riveted to angle iron in bilges in body of ship.
9. Centre Keelson. To be box framed side plates 16" x 9/16", top plate 10-1/2" x 9/16" having angle irons on lower side 3-3/4" x 4-1/2" x 9/16"

- and on upper sides 3" x 3" x 7/16" to be perforated where required and made to act as ventilators.
10. Bilge Keelsons. To be in number and size as required by Lloyds and to be two angle irons riveted together with a bulb iron bar between.
 11. Bilge Plates. To be 24" wide by 5/8" tapering to 12" as per Lloyds' requirements.
 12. Keel Plate. To be 30" x 13/16" running up to the ends of the to above 'tween deck Beams and fastened to the Keel with yellow metal through bolts and galvanised screw bolts in accordance with Lloyds' requirements.
 13. Stringers. Main Deck 30-1/2" x 5/16" and fitted home to outside plating and riveted to angle irons 4" x 4" x 1/2". Iron gutter way to be 16" wide. Hold Beam Stringers to be 25-1/2" x 5/8" in accordance with Lloyds.
 14. Ceiling. To be of red pine. Laid in hatchways 6 ft long with rings to lift, 2-3/4" thick upper turn of the Bilge. Remainder 2-1/2".
 15. Diagonal Ties. On frames to be plate 9" x 5/8" placed as required for classification. Ties on Main Deck Beams to be 13-1/2" x 5/8" placed as required. Ties on Tween Deck Beams 15-1/2" x 5/8" and all in size and requirements of Lloyds.
 16. Beams. Main Deck beams to be bulbed T iron 9 x 6-3/4" x 5/16". Hold Beams to be bulbed T iron 10" x 7" x 5/8" to be secured to the sides of the vessel by the ends of the beam being turned down forming a solid knee and riveted to the frames.
 17. Stanchions. Hold and Tween Deck stanchions to be of round iron and larger than 1/4" larger than Lloyds' rules. To have double stanchions at fore and main hatches with bars between for ladders.
 18. Bulkheads. To have watertight iron bulkheads of 3/8" plate iron at each end of vessel up to Main Deck level and strengthened by angle iron spaced 2-1/2" apart. Foremast Bulkhead to be far enough aft to give space in forecabin for 22 men.
 19. Sheer strake. To be formed of plate iron 35-1/2" x 5/8".
 20. Planking. Garboard strake to be 11" thick x 12" wide of American Rock Elm 6" thick up to 1/5th depth of hold from stringer plate, from thence to plank sheer 4-3/4". The whole outside planking of the vessel to be of Teak except the bottom which is to be of Rock Elm as before specified, the whole bottom and ship outside to be smoothly planed.
 21. Fastenings. The whole of the outside planking to be bolted to the frames with yellow metal screw bolts of approved size by Lloyds, and the most approved method adopted for preventing oxidation of frames, more especially in bottom by surrounding the bolts and nuts with washers in wake of frames or as may be otherwise approved.
 22. Bulwarks. To be of plate iron 5/16" thick to extend 4 ft above stringer plate according to tracing. Stanchions to be of iron H framed with rivets in each palm and to the 1-1/2" in diameter. Six ports of large and

- approved size and made to unship if required, to be cut in each side to allow the escape of water, to have rings, etc. to lift or lash, to have hinges fitted inside so as to give a smooth appearance outside and the frame to be solid with the hinge.
23. Main Rail. To be Teak 4" x 12" to have large pin rail in wake of rigging to be in line with break of poop.
 24. Top Gallant Rail. To be Teak 6-1/2" x 3-1/2" to be of oval form on top. Bulwark to be panelled inside in ornamental Teak work.
 25. Main Deck. To be of Teak 3-1/2" x 5", to be well secured to beams by galvanised screw bolts, to be free from sap, rot or shakes and to be fair and evenly laid, the Decks to be caulked and payed with pitch and resin.
 26. Raised Quarter Deck (Poop). To be of the same material and size as the Main Deck and the sides of raised deck to be adapted for store rooms with entrance as may be arranged on. Roof of Liverpool house to be 2-1/2" x 5" Teak, house to be formed of strong angle iron framing 3-1/2" x 3", one upright angle iron on every beam with knee plates top and bottom.
The sides of the house to be neatly divided into windows with strong glass plate. Brass scuttles each berth and a Teak skylight on top, front of break of deck to be plated with iron. Companion of Teak half dome entrance in for part.
 27. Sweat Boards. To be fitted under Main deck stringer in tween Deck with moveable boards to convey off any sweat from cargo into sides.
 28. Rudder. To be of English Oak. Main piece from counter upward to be 16-1/4" diameter and to be of approved curve and size to be submitted to owner.
 29. Braces. To be of hard Brass of size and shape as per rules.
 30. Windlass. To be Emmerson & Walker or Harfield's Patent as purchaser may decide on. Owner to pay the difference of price from a Common Windlass.
 31. Cathead. To be of Teak with four patent Roller Sheaves, steel pins and patent strappers.
 32. Steering Gear. To have Pickup's and Buchannan's Patent or right and left hand screw apparatus and to have spare iron tiller fitted on after part of rudder head with bolts so arranged in case of accident to screw. (Present one made by Paul of Dumbarton).
 33. Anchor Deck (Monkey Foc'sle). To have small Anchor Deck. Forward as far aft as windlass with lockers for paint, etc. to be planked with 2-1/2" pine and to be same height as main rail with washboards 18" high bolted down on after part leading aft from centre so as to prevent water going on main deck and to topgallant bulwarks round forecastle to have moveable shutter to allow water to run off.
 34. Deck House. To be iron framed and plated with Teak and panelled. Galley to be fitted at after end and to be properly lined in wake of

- cooking range with sheet iron. Floor to be neatly tiled with coloured tiles. Funnel to be of galvanised iron. Fore end of house to be fitted for Carpenter, Sailmaker, Boatswain, Apprentice, etc. and of a size as may be required.
35. Cabin. To be fitted to plans approved by owners, and saloon to be of different kinds of hard wood neatly panelled or else enamelled white and gold as may be approved of. Captain's cabin to be fitted up with drawers, Chronometer Case, Chart Racks, etc. and also Officers' Cabin.
 36. Hatches. To be three in number of a size as may be agreed on. Coamings to be formed of iron 18" high. Hatches to be planked with 1-1/18" tongue and grooved pine. Carlings to be of oak, to have hatch bars, cleats, etc. complete. Top of coamings outside and on lower part inside to have half round iron riveted to them. After hatch to have a Teak Booby hatch on top of iron coamings.
 37. Capstan. To be placed in front of break of Deck, to be brass mounted to have racks for bars, etc. also to have one in forecastle.
 38. Main Stay Plates. To be riveted to upper deck beams to be 2 ft wide and of such length as to take two beams. Diagonal rods to be carried from thence to lower deck beams so as to distribute the strain.
 39. Lower Deck. To be of yellow pine 3" x 6" laid throughout with iron or teak coamings and to be 6ft 9" high Deck to Deck.
 40. Forecastle (Foc'sle). To be fitted up bellow with Teak companion side lights and ventilators and scuppers for running off water, water closets, etc., all to meet Board of Trade requirements.
 41. Hawse Pipes. To be two in number of No.1 Cold blast, to have large thick lips and to be bolted into Teak Chocks. Pipes to have a fair and direct lead to windlass.
 42. Chain Lockers. To be 2-1/2" red pine firmly bolted to angle-iron framing and to be of sufficient size to contain chain.
 43. Mooring Pipes. To be four in number on Main Deck with large inside flange riveted to Bulwarks and finished flush with outside.
 44. Mooring Bitts. Four pairs to be placed on Main Deck, two in front of Foremast and two in front of Quarter Deck, to be large size, say 14" x 9", and to be bolted through stringer plate, to be round headed with tops to unscrew to act as ventilators, also to have two smaller bitts on Poop aft.
 45. Boat Skids. To be 7" square supported on iron stanchions finished with Teak, and to be placed where most convenient.
 46. Boat Davits. To be of sufficient size and number, and one pair on each side, and to be fitted with patent blocks and falls complete, one with four fold patent blocks and the other with three fold patent blocks with mats and grips for each boat and chafing poles to Davit.
 47. Chain Plates. To be riveted to upper edge of sheer strake and with a flat palm and four 7/8" rivets. Rods to be 1-3/8" in diameter.

48. Dead Eyes. To be in number and size as required for rigging and to be lignum vitae.
49. Fife Rails. To be fitted with square stanchions of Teak, abaft the main^[2] mast and fore mast with six (sic) sheaves in each and a Teak rail running between them, stout iron hoops with eyes in them round lower part of masts and pin hoops^[3] above, all galvanised.
50. Water Tanks. Ten in number to contain 400 gallons each, to be placed where most convenient^[4].
51. Pumps. To be of Redpath's patent of sufficient size for ship with bilge pumps fitted and spare upper and lower boxes to each pump and separate sounding pipe between pumps.
52. Boats. To be four in number according to scale of Board of Trade, viz. two life boats, one Cutter and Gig. Captain's Gig to be of Teak and fitted with Mast and Sails. The other boats to have Teak top strakes, all boats to stand on chocks or have skids and to be placed as may be required. To be copper fastened and to have rowlocks, yokes with rudder for each and a set of ash oars, boathook and bucket for each and gratings for each boat where required.
53. Compasses. Three binnacles to be found, viz. Steering Binnacle and Compass, Standard in front of Poop with Board of Trade Compass, Azimuth on Skids between Boats, one suspended Cabin Compass, two spare cards, two spare Agates and two spare pivots to each compass with deviation card to be found, and two spare brass compasses all to be properly adjusted by swinging the vessel.
54. Brass Work. All the Bitt ends, cabin door locks and hinges, and door slides, mounting for capstan with plate and ship's name. Helmets for compasses, Teak hand-rail in front of poop stairway and Brass perforated plates on steps of stairs, Ship's bell 50 lbs. with name engraved, skylight hinges, Quadrants and guard side light frames to be of brass, small bell for Quarter Deck.
55. Plans, etc. The Builder to furnish model and Plans for approval, according to which the ship is to be built in strict terms, Deck plans and midship section showing Keelsons, Beams, Stringers, Decks and Stanchions with Bulwarks, rails, etc. Rigging Plan and profile.
56. Rigging. All blocks to have lignum vitae sheaves, steel pins, and the principal blocks Patent Roller Bushes on Brace and Halliard Blocks, all the deadeyes, Hearts and Bull's Eyes to be Lignum Vitae. Iron for binding to be best scrap Yorkshire. Sheerpoles to be served. Rigging to be or iron wire, Newall's best charcoal galvanised; standing rigging to be served and parcelled overall. Standing rigging and stays fore and main 5" remainder in proportion, size of rigging stays, etc. to be first approved by owners.
57. Lower Masts & Yards, etc. Fore and Main masts and Bowsprit to be of iron, Mizzen Mast to be Vancouvers,^[5] Top Masts of Vancouvers, remainder of Spars to be pitch pine or black spruce, spars to be in size

- as agreed on. All iron masts and steel yards to be made on the most approved plan and in no case less than the size and requirements of Liverpool Underwriters' Rules.
58. Yellow Metal Sheathing. Vessel to be sheathed from Keel to 18 ft water mark on top of paper and tar sheathing to be smoothly put on, sheets to be 22, 24, 26 oz. metal.
 59. Cargo Winches. Double purchase to be found at fore and main hatches, foremost winch to have chain lifter attached.
 60. Scuppers. Upper Main Deck, four on each side, to be large and oval, to be formed by turning angle-irons up with piece of angle - iron above and level with stringer plate, all to be made quite tight, no scuppers to be cut through stringer plate.
 61. Cementing. Vessel to be cemented to the level of limber holes amidships thence to the top of the bilges so as to cover bolt heads. Frames and floors to be well filled. "All inaccessible parts of the peaks were filled in solid with concrete cement, and the upper deck waterways flushed and rounded with cement." [6]
 62. Painting. Three coats of red iron paint from Keel to Gunwale and rail outside and inside woodwork to be properly painted. Bulwarks to be finished suitable colours, Masts and Spars white last coat zinc. Twixt decks white, Beams white, Deck unpainted.
 63. Sails. A double suit of sails of best extra all long flax canvas (except Royals, Mainstay sails, Skysail, Mizzen Staysail, flying jibs of which there is one of each) with one set of studding sails, Boat covers and mast covers as per list herewith.
 64. Sundries. Four hen coops of Teak 8 ft long. Pig houses covered with teak to be found and fitted with all requisites necessary and placed where required. Racks for arms to be fitted, one four pounder gun to be found and fitted with carriage, Breech ropes and fixings, ladders for hold and Twix Deck and for Peaks and skids. Handsome stairway with perforated brass steps. Teak hand rails, Belaying pins and rigging winches at fore and main rigging. Spare tiller to be found, Gratings aft and covers for steering gear in Teak. The Block Sheaves, Hearts, Deadeyes and Bull's eyes to be of Lignum Vitae, the pins steel. The bindings inside fore and main deadeyes 9" in diameter, remainder in proportion. A figurehead by Allan with suitable carving about the stern and to correspond with the name of the ship.
 65. Anchors. As required by Lloyds, all Trotman's and admiralty tested. [7]
 66. Cables. Two chain cables, one Stream cable as per Lloyds and Admiralty proof Test, one Towline 120 fathoms 9", three warps 90 fathoms each 8, 6 and 5 inch. Owners to have option of ordering anchors. Cables and all other chains from Brown and Lennox or other approved makers and, if any differences of prices between them and others as supplied on the Clyde, to be paid for by the owners.

67. Sails. 1 Flying Jib, 3 Standing Jibs, 2 Fore Topmast Staysails, 2 Fore Sails, 2 Upper Fore Topsails, 2 Lower Topsails, 2 Top Gallant Sails, 1 Royal (Fore), 2 Main Sails, 1 Royal (Main), 2 Upper Main topsails, 2 Lower Main topsails, 2 Main Top Gallant sails, 1 Main Skysail, 1 Main Topmast Staysail, 1 Main Spencer, 1 Mizzen Cross Jack, 1 Mizzen Top Gallant Sail, 2 Upper Mizzen Topsails, 2 Lower Mizzen Topsails, 2 Spankers, 1 Mizzen Topmast Staysail, 1 Mizzen Top Gallant Staysail, 3 Topmast Studding Sails, 3 Top Gallant Studding Sails, 2 Lower Studding Sails, 2 Wind Sails, 1 Main Top Gallant Staysail, set of boat sails, spars and gear complete as specified. A Quarter Deck Awning to after hatch with stanchions complete with wire ridge rope, 2 setting pins, 6 palms assorted, 24 sail needles assorted, 6 sail hooks and 4 iron rubbers.
68. Carpenter's and Boatswain's Stores. 1 Hand Copper Pump, 3 Pump Spars, 3 Lower Boxes, 1 Brake Burgee Spare, 1 Pair rigging screws, 2 Laundering Rods. Full set of Studding sail Booms and Yards with Blocks and Gear complete as specified, all studding sail booms to be under the yards; side ladders with two brass headed stanchions with ropes complete on both sides. Hold ladders, forecastle and half-deck ladder, ditto as before provided. 1 Teak accommodation ladder with Crane complete. 1 Booby Hatch of Teak for Half-deck as specified. 2 sets of tarpaulins for each hatch. 6 handspikes. Capstan Bars (Complete sets to each Capstan in Racks). 1 Pitch Pot and ladle, 12 chain hooks, 1 Grindstone and trough, 6 Tar Brushes, 1 set of ash oars for each boat. 7 Double Luff Tackle Blocks. 7 Single Blocks. 24 Spare Sheaves and pins, 12 spare blocks assorted, chain stoppers as before provided, 2 shank painters, 1 spunyarn winch (iron), 1 Double purchase block, 1 single purchase block, 2 cat blocks, 2 Top Blocks, 1 Purchase Gin and chain, 1 Ballast Chain, 1 Purchase Gaff, 1 Anchor Fish-hook, 1 Boat hook to each boat, 2 Watch Tackle blocks, 2 snatch blocks iron bound, 9 Ballast shovels, 2 Marline spikes, 6 Serving Mallets, 1 iron long 6 lb gun with carriage complete; 4 pair chain can hooks, 2 pairs timber grips, 1 pair puncheon slings. Hen coops as may be required. 4 cork fenders, boat chocks complete. 1 Double purchase winch to be fitted with Gipseys ends for taking cable. 1 iron capstan on Main Deck and one for forecastle as specified.[8] Pig Houses with iron bars as before described. 1 dozen assorted connecting shackles 60 ft (lineal) soft wood deck deal, 30 ft lineal Elman Redwood, 12 scrapers, 4 iron Crow Bars, 2 iron slices, 2 flat files, 12 Hooks and Thimbles assorted, 2 Buoys and Ropes, 2 Life Buoys as specified of Cork, 2 spare shackles for Anchors, 2 Doz. Assorted Forelocks, 2 Doz. Washers for Boats, Fids for Masts as specified patent with lifting screws, 1 cwt. of assorted nails, 1 Head Pump, 1 Stern Pump, Fire Engine with Leather hose.

69. Spare Spars. 1 Spare Spar for Lower Yard or Topmast (Vancouver); 1 Spar for Lower Topsail Yard or Jibboom; 1 Spar for Lower Topgallant Yard; 6 Spars for Lower Studding Sail Booms
70. Cooper's Stores. 4 Water Casks (100 gallons each), 4 Breakers (20 gallons each), 2 Harness Casks Teak with Brass Hoops, 12 Buckets Teak with brass hoops in Teak stands, 1 Water can, 1 Wash Deck Tub, 5 Mess Kids, 2 Water Funnels, 2 Draw Buckets, 6 Bread Boxes, 1 Cask for flour, 1 Steep Tub, 2 Cook's Buckets, 2 Cabin Buckets.
71. Ship Chandler' Stores. 1 Barometer, 4 Hour Glasses, 1 Spy Glass, 2 Half Hour glasses, 1 Log Reel, 1 Deep Sea Lead, 1 Deep Sea Lead Line and Reel, 2 Hand Leads and Lines, 2 Lead Log Boards, 1 Harpoon, 1 Pair Grains, 1/2 Hide Pump Leather, 2 Brass Signal Lantern, 1 Forecastle Globe Lantern, 18 Fishing Hooks, 3 Fishing Lines, 1 Spare Log Line, 1 Brass Speaking Trumpet, 1 Fog Horn, 6 Deck Scrubbing Brushes, 6 Paint Brushes, 1 Register Box and Brass Lock and Key, 4 Mops, 1 Cabin Sweeping Brush, 12 Paint Brushes assorted, 5 Oil Tanks (10 gallons each to be fitted where required), 1 Shark Hook, 1 Large Portable Filter for Water, 1 Teak Medicine Chest with flips of names on it and fitted with medicines according to Act of Parliament, 1 Ensign, 1 Union Jack, 1 Vane, 1 Burgee with Ship's name, 1 Set Signals (largest size), Mercantile Code and Book complete with Signal Halliards fore and aft and box on locker to hold them, 1 Private Signal.
72. Cabin Stores. 1 Copper Tea Kettle, 1 Tea Pot Elkington E. Plate, 1 Coffee Pot, 12 Tea Spoons Elkington E. Plate, 12 Table Spoons Elkington E. Plate, 12 Dessert Spoons Elkington E. Plate, 12 Plated Forks Elkington E. Plate, 12 Table Knives with Ivory Handles, 12 Dessert Knives with Ivory Handles, 2 Carving Knives and Forks, 1 Steel, 1 Cabin Stove with Copper Funnel and pan complete to be approved of, 1 Metal Tureen, 1 Metal Ladle E. Plate, 4 doz. Plates sssorted, 4 doz. Dishes to match, 3 Metal Dish Covers, 2 Black Jacks, Wash-hand Basin and Jug, and other crockery to match to be fitted up in each state cabin, 6 Stools and 1 set of fire and hair cushions, the same to be secured to the Deck and locker under cabin, Table for Linen, and water jugs for cabin, 6 Best Percussion muskets and Bayonets, 6 Best Percussion Pistols, 12 cutlasses, 1 Cleaning Rod, 2 Nippers Key and Trunscrew, 100 Ball Cartridges, 25 of 4 lb. Priming Horn and Pricker, 2 Boxes of Caps, 24 4 lb. shot, 2 lb. of fire Gunpowder, 1 Copper Magazine with Brass Locks and Keys, 3 Pairs Handcuffs, 2 Brass Candlesticks, 1 Pair Snuffers and Tray, 4 Decanters, 1 Cabin Lamp, 2 doz. Tumblers, 2 doz. Wine Glasses, Lamps to be supplied to each room to be portable, 1 Pair Lamp Scissors, 1 Tea and Breakfast Service complete, 2 Brass Locks, 1 Teak Sideboard, 1 Pair Flour Scales, 1 Spring Balance, 1 Set Scales and weights, 1 Pair of Steel Yards, 2 Coffee Mills, 1 Candle Box, 1 Flour Scoop, 1 Flour Dredger, 1 set of Castors with 5 or 6 bottles E. Plate, 1 Fowl (sic), 1

Plate Basket, 3 Cork Screws, 1 Brush, 1 Dust Pan, 2 Fancy Bread Basket.

Cabin to be fitted up as per plan to be given and agreed upon. Hair Cushions on after lockers, Brass rings to locker lids and locks for each. Lockers for Bread, Peas, Barley and Rice to be fitted up and lined with tin. Pantry to be properly fitted up.

Lockers that are necessary to be fitted up in cabin. Brass lights to be in each room and on each side of the forecastle as before described.

Looking glass and Time-piece for Cabin. The Poop Skylight Companion and Quarter Hatch Grating over wheel gear and Hen Coops to be of Teak.

73. Galley. To be of Wood.

74. Cook's Stores. 1 Frying Pan, 1 Cook's Ladle, 1 Tormentor, 1 Cullender, 2 Dippers, 6 Saucepans, 2 Stew Pans, 1 Baker, 1 Pair of Tongs, 1 Gridiron, 3 Baking Pans, 1 Cook's Knife, 1 Sieve, 1 Ladle, 1 Cook's Lantern, 1 Cook's Axe. Any of the above to be found with Cabouse not to be supplied, Cabouse to be approved of by owner to be of the best Modern Construction. 6 Bath Bricks, 1 Cook's Saw.

75. The whole to be of the very best workmanship, material and finish. All wood about the decks to be of Teak and anything omitted in this specification necessary in either building or outfit to complete the vessel for sea to be supplied by the builder free of charge.

The Ship Cutty Sark