

HMS Bounty Simulation

for Microsoft's Flight Simulator 9 and FSX

by Milton Shupe, Nigel Richards, Rob Barendregt, Sasha Rieger, and Rob Ibey



Overview

This famous replica of the original Bounty was launched in 1961, commissioned by MGM for their 1962 film *Mutiny on the Bounty*. More recently she starred in, amongst numerous others, the *Pirates of the Caribbean* movies.

Built from the original ship's drawings still on file in the British Admiralty archives, she was constructed in the traditional manner at Smith and Rhuland Shipyard in Lunenburg, Nova Scotia. However, all the dimensions were increased by approximately one third to accommodate the large 70 mm cameras used at the time. Although the ship was scheduled to be burned at the end of the film, Marlon Brando threatened to walk off the set, so MGM kept this vessel in service. A second *Bounty* replica, named HMAV *Bounty*, was built in New Zealand in 1979 and used in the 1984 Dino De Laurentiis film *The Bounty*.



The original Bounty, commissioned as HMAV (His Majesty's Armed Vessel) Bounty in 1787, was built as *Bethia* in 1784 at the Deptford shipbuilding yard in Hull, England. Initially a small merchant ship, she was purchased by the Admiralty and converted into a naval transport for the shipment of breadfruit plants to the plantations of the West Indies.

HMS Bounty was made eternally famous by the legendary mutiny led by Fletcher Christian against Lieutenant William Bligh in 1789.

There are many references online from which to explore and enjoy the many tales, travels, and travesties related to the Bounty. Books and movies are plentiful and can be found in the many references explored.

HMS Bounty Simulation

After the sinking of the replica Bounty during Hurricane Sandy in October 29, 2012, I wanted to honor her with this simulation. Research and work started in November 2012 but the project laid idle for a year with commitments to other projects. In 2014, the project was re-awakened and taken to fruition in 2015 with major contributions by Nigel Richards and Rob Barendregt, with sailing knowledge, advice and guidance provided by Sasha Rieger and Rob Ibey.

Modeling a ship like this required a lot of detail but parts and polygon constraints allowed for only so much in FS9. Once modeled, we focused on promoting sailing realism to the extent possible. Rob Barendregt joined the project and brought the programming expertise to do just that. The ship is totally wind driven with individual sail management and has appropriate ship responses and effects from wind speeds, direction, sails deployed, and sails configuration as much as possible in a flight simulator. Note that there are separate packages for FS9 and FSX because of the special sim interfaces required for the gauge programming.

Nigel brought the ship to life in six authentically inspired paint schemes demonstrating his true artistic talents. (The *Bethia* is shown on page 1.) He followed by assembling water, wind and ship activity sounds to bring the simulation experience to new highs with Rob's programming for special circumstances.



H.M.S. Bounty



Early 1960 Replica



Late 1960 Replica



H.M.S. Beagle



H.M.S. Endeavor



The Bounty Virtual Deck

The Bounty allows for repositioning sails from port-side to the starboard-side to catch the wind, individually selecting sails appropriate for the wind speeds and direction, weighing anchor, and maintaining course. The ship responds to sails configurations and winds for speed, yaw, and roll. Steering is provided by rudder control.

Gauges and Controls

A Sail Management compass Gauge is provided to assist the user with weather conditions, wind speed and wind direction, a graphic display of sails position versus relative wind direction, and other factors to better visualize setup. A Sail Configuration Gauge is provided to individually select, show or hide sails. Tooltips are provided to get readouts on each switch. Additional switches are provided for Auto-Skipper, Lanterns, Cannon fire Salute, ambient shore Birds sounds, Ship's Bell and Anchor, and "tugboat" function. These gauges collectively are hereafter referred to as the Sail Management Window (SMW).



Operations Controls

- | | |
|---|--|
| 1) Drop/weigh anchor/hide sails: | SMW Switch |
| 2) Lanterns, Salute, Birds, Ship bell: | SMW Switches (Cannon recharges after 10 seconds) |
| 3) Manual Sail Management:
deploys/stows all | SMW Switches for each sail – Master switch |
| 4) Auto-Skipper: | SMW Switch and Green light when activated |

- 5) Tugboat: SMW Switch (far right unlabeled switch)
- 6) Steering: Rudder pedals or twist joystick (sim rudder controls)
- 7) Sail Management Window: Shift+1
- 8) GPS: Shift+2
- 9) Test Gauge: Shift+3 - Use this in screen shots if reporting issues
- 10) Repositioning Sails-Manual mode: F5,F6,F7,F8 Flaps keys-there are 10 positions, 11 degrees movement with each position: F5=Full port side; F6=decrement toward port side; F7=increment toward starboard side; F8=Full starboard side
- 11) Crow's Nest View Fwd: Numpad 5 (in FS9); VC alternate view in FSX
- 12) Alternate Views: For FSX, alternate views are provided

Note: Electricity is always available for the external mooring lanterns and internal lanterns



Getting Started

As with a real world sailing vessel and tall-ship, square rigger, one must have favorable winds to get underway and maintain navigation control. Large period square-rigger ships like this required patience, discipline, and mastery of the ship's capabilities. NOTE: To get the most enjoyment out of this package, set Flight Sim Realism Settings to "Hard" (Aircraft/Realism Settings). This does not make the ship harder to control but the effects of winds are more evident.

The Departure Point

We do most of the heavy work for you so all you need to do is manage anchor, winds, sails, and steerage. Find a good starting waterway and plan your excursion. Keep in mind that based on wind speeds, your average progress will range from 6-15 knots so keep your planned route a reasonable distance based on your time available for the sim. A good place to start for interesting scenery and navigation challenges is Friday Harbor – W33, or Roche Harbor - W39. You can sail around many islands,

mountainous scenery, or down to Puget Sound. There is also a list of nice, scenic water ports below and in the Docs folder to try.

Setting Weather

Once you load the ship, in FS you will need to set wind speed and wind direction (World/Weather/User Defined/Customized Weather) in the general direction to get you started, then weigh anchor, set sails and then follow your course. A wind speed of 16 to 24 knots is ideal for achieving good sailing speeds and wind effects. Unlike aircraft where a headwind is optimal for takeoff, you want winds from the rear to move the ship. So after pulling up the SMW, look at the compass and select a wind direction from the lower half of the compass degrees, or in the Broad Reach or Running areas of the compass. Then go to Customize Weather and set that direction. See also the chart on Page 6.

The Anchor

The anchor may be dropped anytime by selecting the switch. The sails will be stowed but the anchor will not drop until speed is less than 1 knot to protect the hull. Select the switch again to weigh anchor. You must use the SMW to select sails to depart. Use the Auto-Skipper function or select the Master switch to deploy all sails. You may also use the SMW to manually preselect individual sails for your initial movement. The sails will show after the anchor is weighed.



Sails

Sails on these ships were large and the winds provided necessary propulsion. Speeds depended on weight, wind speed and direction relative to the sail arms position. (The sails are attached to the rotating sail yard arms which are attached to and rotate around one of the three masts.) Due to standing rigging, the sail arms can only be rotated so far.

Bounty Replica Yard Arm Mount →

Winds of 20 knots or greater will propel the ship up to 15 knots depending on wind direction angle to the sails and number of sails deployed. The more acute angles are not as efficient as with winds that are near square to the sails, so try to keep sails directly ahead of the winds as much as possible. With that said, you can achieve wind-driven propulsion around 260 degrees of the compass. Because of the weight and speed of this ship, you cannot tack through the “No-Go” zone (or Dead Zone). The No-Go zone is defined as winds coming plus or minus 50 degrees to ship heading.



Forward speeds are determined by sails deployed, wind speed and wind direction relative to sail position. Each of the sails contributes to propulsion.

Main Sail Positions

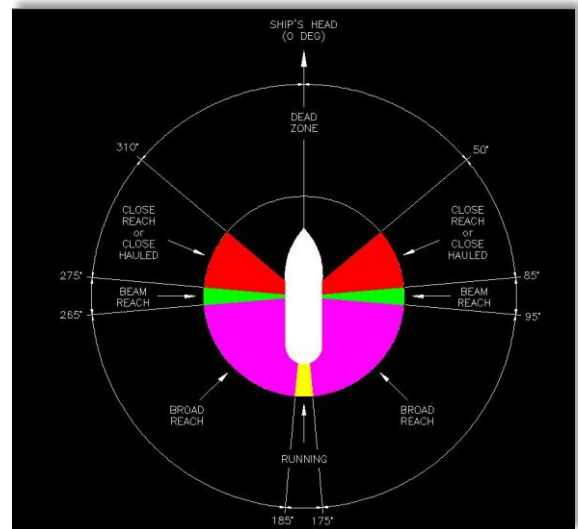
The sails on the three masts have 10 positions and may be rotated through 99 degrees to catch the wind. Using Flap keys, each increment gives you 11 degrees of movement. Home position is port side, 50 degrees left of square (F5). F8 would move the sails 99 degrees to the starboard side, 49 degrees right of square. In manual sail management mode, Function keys F6 decrements and F7 increments one step, or 11 degrees, at a time. If selected, Auto-Skipper manages sail positions for you.

Jibs, Staysails, and Spanker

The longitudinally rigged sails are filled by the wind and swapped automatically port to starboard based on wind direction. They contribute a smaller percentage of propulsion than the main sails but provide course stability helping to equalize lateral pressures from bow to stern.

Locked “In Irons” – Dead Zone or No-Go Zone

Sails can be positioned to propel the ship in all but 100 degrees of the compass - the no-go or “Dead” zone. If you find yourself in that zone and locked “in irons”, you can get out of it with patience and maneuvering. Simply set your sails so the wind hits the face of the sails. If the wind is sufficient, it will slowly move the ship rearward and you can use the rudder to steer out of the condition. Continue to move the sails around until you have successfully turned the ship far enough to then swing the sails around to catch the wind for forward motion.



Point of Sail shows ship heading relative to wind direction. Winds in the Running or Broad Reach areas are most effective.

The Sail Management Window

The Sail Configuration portion of this window allows you to individually select sails to hide or show in Manual mode. The 14 switches have tooltips to identify the sails to be selected. Left to right, the switches manage jibs, foremast sails, main mast sails, mizzen mast sails, Spanker and staysails. Selecting the right-most “Master” switch hides/shows all sails with a single click. The red light indicates too many sails deployed for wind conditions. You have 30 seconds to hide some sails before damage occurs.



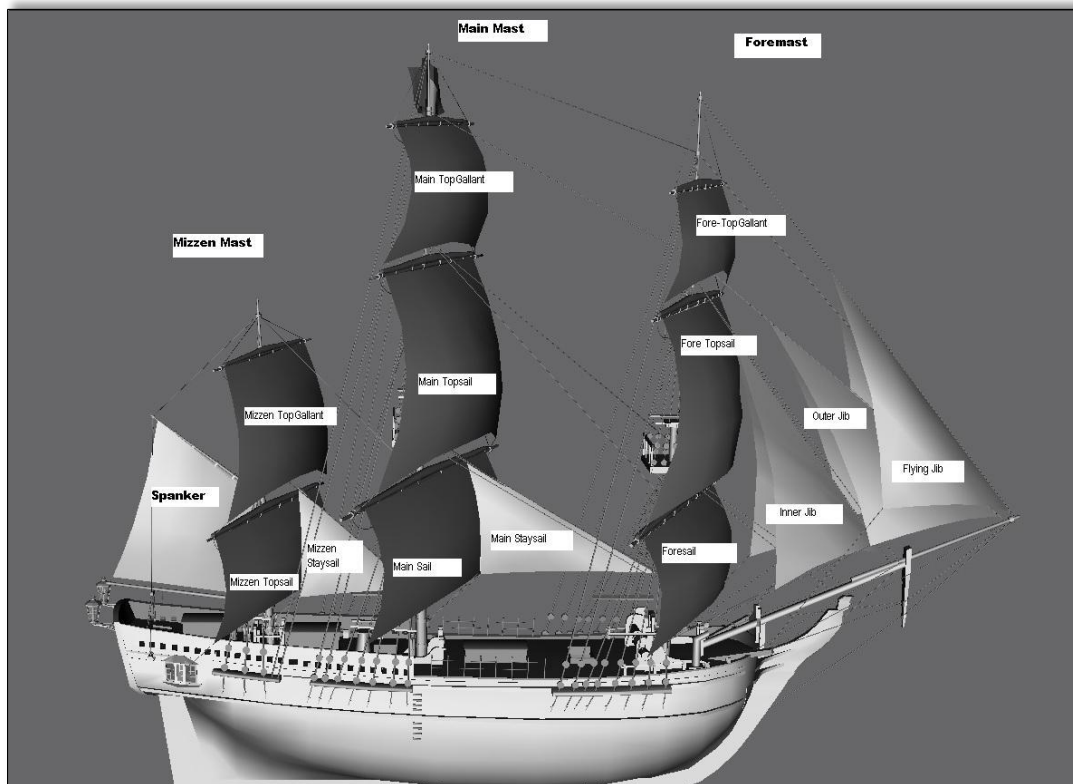
The top-right switch and green light indicate the “Auto-Skipper” feature is active. It will not activate until the anchor is weighed. It will deactivate automatically if you enter the “no-go” zone. The Auto-Skipper switch is also used to reset damaged sails conditions.

Keep in mind that every sail makes a contribution to speed, yaw, and roll so as you change configuration, there will be changes to the ship’s performance and response to wind conditions. For example, if you are experiencing high crosswinds, the ship will be yawing (showing lateral speed and deviation from course line), and roll. Gusting winds above 30 knots can be dangerous to damage of sails or exposure to a “snap roll”. To decrease your exposure, adhere to the high winds table below. If you damage sails, they will not be available until you reset by turning the Auto-Skipper switch On/Off.

There are five switches above the Sail Configuration display. Their functions are:

- 1) **Lamps** - turns on exterior and interior lanterns – may be left on at all times
- 2) **Salute** - Cannon Fire Salute for when entering port; one shot, then 10 seconds to recharge
- 3) **Birds** - You may turn on/off the ambient shore/sea birds (Volume controls with right click)
- 4) **Ship’s Bell** - Manually sound bell as you wish for normal reasons. Will also sound when Auto-Skipper is disengaged, or when the HMS Bounty livery enters gale force winds and raining. (Volume controls with right click)
- 5) **Anchor** - Drops/Weighs anchor with sounds. When dropped, sails are stowed; anchor chain shows when less than 1 knot. Anchor must be weighed before sails can be deployed.
- 6) **Tugboat** – Far right Switch (unlabeled) - You can use the “tugboat” function after anchor is weighed with no sails deployed. Use the elevator function for forward/backward maneuvers up to 4 knots, and the rudder for heading changes.

Sails Identification



The Bounty's Sails

The Sail Management Window - continued

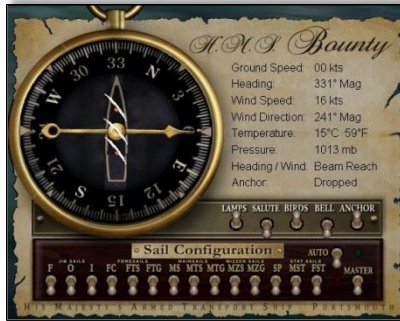
The rotating compass shows the fixed ship position facing upward, the sails position, and wind direction to the sails. Additionally, it shows ground speed, wind speed, temperature, barometric pressure, and ship's heading relative to wind direction (Close Reach, Beam Reach, Broad Reach, Running, and "In Irons"). This provides a nice visual to assist with determining necessary actions for wind direction, setting sails position, as well as viewing the ship's heading versus wind and sails position. Examples below reflect the Point of Sail chart and related sail positions.



Close Reach



Broad Reach



Beam Reach



Running

Managing Sails in High Winds – Manual Control

The ship's sails are managed according to the Beaufort scale that classifies winds by speed ranges and therefore sails to be deployed, clewed, keeled, or stowed. We have implemented this per the following table where sail configuration must be adjusted to avoid sail damage or snap rolls. This is the simplified version.

With increasing wind speeds, we suggest the user should stow the sails in the following order:

- .. Below 30 Knots: Full Sails may be used
- .. > 30: the 3 Top Gallants must be stowed
- .. > 38: the Fore and Mizzen Topsails must be stowed
- .. > 46: the Main Topsail must be stowed
- .. > 54: all 6 longitudinally mounted sails (jibs, staysails, and spanker) must be stowed
- .. > 62: both Course sails (Fore/Main) must be stowed (all sails stowed)

With decreasing wind speeds, deploy the sails in reverse order. Note that these are simply guidelines. You must observe the warning light since with gusting winds, you may have to stow more sails.

Failure to manage sails properly results in a red warning light in the Sail Management window. You have 30 seconds to correct the situation before damage occurs.

Hint: When setting winds and gusts manually, keep winds and gusts in the same range per the table above. For example, set winds to 30 with gusts to 37 knots, or winds to 38 and gusts to 45 knots.

Managing Sails in High Winds - Auto-Skipper Feature

The Auto-Skipper feature may be activated with the switch on the right side of the SMW. The switch position and a green light indicate the activation is working.

What the Auto-Skipper does when Active:

- sets the optimum sail angle given the ship's heading and wind direction, and
- controls individual sails deployment depending on ambient wind speed as specified in the high winds tables above.

Auto-Skipper can only be Activated (or remain Active) when:

- Anchor is weighed
- Wind direction is not within the +/- 50 degree sector (no-go zone) from the head of the ship; meaning it is only Active if forward speed is possible. (If the green light does not come on, conditions are not met.)

When the Auto-Skipper feature is active, manual control of the sails angle (F5-F8) and sails configuration controls are disabled.

To disable Auto-Skipper, simply turn off the switch and resume manual control through the Sail Mgmt window. Once under manual control, you must continue to manage sails per the wind speed guidelines.



Shows Auto-Skipper in Control of Sails Configuration

Other Functions in the Sail Management Window

- Lanterns, external and internal, are lit with the Lantern light switch
- Cannon Fire "Salute" is fired with the "Salute" switch (after a 10 second delay, it is re-armed)
- The Ship's bell may be sounded when appropriate and will sound automatically if Auto-Skipper turns off due to wind direction or if winds exceed 34 knots and raining (Gale force), or if visibility is less than 300 meters (fog – ¼ mile visibility).
- The Anchor switch is used to drop anchor (and stow sails) or to weigh anchor.
- The "Tugboat" function may be used to move to or away from docks or wharfs, or to reposition the ship for favorable winds.

Multiplayer Sailing

As with aircraft in MP, you will experience viewing anomalies with the Bounty as well. This is due to the limited data set passed between the MP session players. As the Bounty uses direct sim interfaces for specialized functions, you may experience additional anomalies.

P3D Versions Not Supported

We cannot support P3D as we do not run it. We have successful tests in all versions of P3D, however versions (2.4 and 2.5) require deactivation of some add-ons. Although the Bounty ran well in P3D in our tests, only a test by you can determine success for your setup.

For versions 2.4 and 2.5, FSTramp and TacPac must be disabled.

NOTE: The latest version of FSUIPC is required for all P3D versions. Sim Realism settings must be set to “Hard” for wind effects.

Step by Step – Let’s Go Sailing

1. Load the Bounty
2. Load the SMW – Shift+1 (automatically sets lamps, anchor down, and sails stowed)
3. Set your wind direction and wind speed (World/Weather/User Defined/customized weather)
4. Weigh anchor
5. Select your sails manually or select Auto-Skipper
6. Bon Voyage

The Views

Several views are available to assist the helmsman in staying the course and assessing the ship's condition.

The Top Deck View

This is the default VC view for the helmsman from which to manage the ship.



Helmsman's View at the Wheel

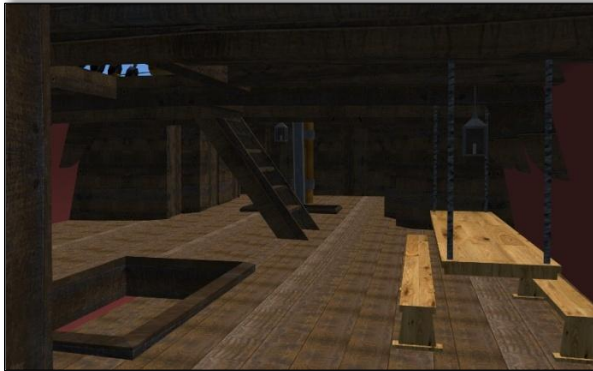
Crow's Nest View

This view is especially helpful when navigating rivers for better views of jutting terrain and river bends. This view is available in FS9 by using the Num 5 key. In FSX, this is an alternate Spot view of the aircraft. You might also notice the animated flags and the foot ropes swinging in the breeze.



Lower Deck

The lower deck is sparsely appointed due to poly restrictions but the basics are there.



Captain's Quarters

The Captain's Quarters is a complete suite with bed and nightstand, chest of drawers, a working desk and chair, lanterns, and a meeting and map table. Pictures of King George III and wife are reminders of the bosses in his life. Lots of storage space for those long voyages, but three bay windows and the rudder shaft remind him of where home really is.



Captain's Quarters Looking Forward



Captain's Quarters Looking to Port Side

You can move down from the VC view using standard FS9 VC seat adjust key assignments, however, the freeware "F1View" From Flight 1 is most useful for this in FS9 to allow mouse control of moves in the VC or Spot views. Just do a web search for it. In FSX and P3D, alternate VC views are provided.

Exterior Views

Aside from Spot view, FSX views are added to easily view the ship's interior and exterior from various vantage points.



Recommended Sailing Areas

W33 Friday Harbor WA
W39 Roche Harbor WA
W49 Rosario WA
WA81 Fishermans Bay / Lps WA
WA83 Westsound/Wsx WA
WN19 Gig Harbor WA
16K Port Alice AK
19P Port Protection AK
2Y3 Yakutat AK (Beautiful mountain range)
2Z1 Entrance Island AK (SE of Juneau - good sailing scenery)
2Z6 False Island AK (South of Sister's Island and Juneau)
3Z9 Haines AK (Nice sail to Skagway or Juneau from here)
5Z1 Juneau Harbor AK
7K2 Skagway AK (sail to Haines for a nice short trip)
5KE Ketchikan Harbor AK (beautiful scenery – nice launch point for longer voyages)
6MA9 Cuttyhunk Harbor MA
M06 Havre De Grace MD (upper Chesapeake Bay-to Baltimore Harbor or Norfolk)
61FD Chalk's Key West FL (Good launch for the keys or Caribbean)
FL26 Kitching Cove FL
X44 Miami FL
L11 Pebbly Beach CA (Catalina Island)
Q87 Lost Isle CA (Navigate this river to San Francisco Bay)
For more water ports, see the Designated "Water Runways" pdf in the FSX folder.

Installation

Requirements

This installation requires that you to have the latest version of FSUIPC. Registration of FSUIPC is NOT required for basic functions used here. If you do not have it, you can obtain a free download from Pete Dowson's site at:

<http://www.schiratti.com/dowson.html>

Realism Settings

Flight Sim Realism settings must be set to "Hard" for best wind effects. Winds will not work with "Easy" realism setting in FSX.

HMS Bounty Versions

There are separate and specific versions of the HMS Bounty package for FSX and FS9 due to gauge programming interfaces with the simulators. Be sure that you are installing the correct package.

Have fun! :-)

Milton Shupe

Feedback to mshupe614@hotmail.com

HMS Bounty Project

April 2015

Credits

Modeling	Milton Shupe
"Flight Model"	Milton Shupe
Ship's Wind Responses	Rob Barendregt
Gauges	Rob Barendregt, Milton Shupe, Nigel Richards
Textures	Nigel Richards
Paint Kit	Nigel Richards
Sounds	Nigel Richards, special sound programming – Rob Barendregt
Effects	Microsoft default, Milton Shupe, Nigel Richards, Rob Barendregt
Helmsman	Craig "Full" Richardson
Research	Milton Shupe, Sasha Rieger, Rob Ibey, Nigel Richards
Documentation	Milton Shupe, Rob Barendregt, Nigel Richards, Rob Ibey
Advice and Counsel	Sasha Rieger, Rob Ibey, Rob Barendregt, members at FSDeveloper.com and Sim_outhouse.com

Special thanks to Pete Dowson for creating and maintaining FSUIPC, and to Doug Dawson for dsd_xml2ipc, that enables us to interface with FSUIPC from XML-coded gauges, and for the new XMLsound.gau. These Gentlemen's contributions to our world are simply awesome in every way. Thank you so much Pete and Doug.

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The textures author, Nigel Richards, has provided a repaint kit, and grants permission for the texture files in this package to be used for repainting the HMS Bounty only. The Repaint kit can be obtained at [Sim-Outhouse Add-ons Library](#).

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Bounty Comparison Statistics

	HMS BOUNTY REPLICA	HMAV BOUNTY
Built	1960-1961 at Smith & Rhuland Shipyard in Lunenburg, Nova Scotia Christened 8/28/1961	Commissioned as HMAV Bounty in 1787, the ship was built at Deptford Yard, 1784 as Bethia in Hull, England
Gross Tonnage	412 Registered Gross Tons (500 Displaced tonnage)	215 tons
Length Overall	180'	
Length on Deck	120'	90' 10"
Height of the Main Mast	115'	
Draft	13'	13'
Beam	30'	24'10"
Freeboard	12'	12'
Sails	18+ (10,000 sq/ft)	18
Max Capacity	12 underway, 150 on-deck, berthing for 49	46 started the cruise
Freshwater	1,800 gallon storage, Water maker	Rain
Electronics	GPS, VHF, SSB, one radar	One sextant and a Kendall Chronometer
Timber	400,000 board feet	
Lines	10 miles of rigging	
Cannon	Four 4-pounder Carriage cannons,	Four 4-pounders and 10 swivels

Decks	Three	Three
Anchors	Two, 900 lbs each	Two, 600 lbs each
Electricity	35 KW 208 3 phase	Candles
Galley	Fully equipped and operational	Adequate for the time
Heads (Restrooms)	Two modern, and showers	Head rail/chamber pot
Safety Equipment	Full complement	Probably not
Signal Flags	Full complement	Full complement
Gangplanks	Two, each 20' long	Rope ladders
Life Rafts	2 self-contained life rafts Inflatable rescue boat Rigid hull launch	A cutter and a 23' launch
Engines	375 hp John Deere (2), diesel	The wind
Propellers	2 - 54" x 42" four blade	
Owner	HMS Bounty Organization, LLC	British Admiralty

Links for Further Reading or Viewing

[http://en.wikipedia.org/wiki/Bounty_\(1960_ship\)](http://en.wikipedia.org/wiki/Bounty_(1960_ship))

http://en.wikipedia.org/wiki/HMS_Bounty

<https://www.youtube.com/watch?v=8XchSYxkP10> (The making of the 1935 production)

<http://acms.sl.nsw.gov.au/item/itemdetailpaged.aspx?itemid=1025647> HMS Bounty Log Available