Microsoft Flight Simulator X
LHD 2 USS ESSEX
LHD 3 USS KEARSARGE as AI

SUPER HQ

Deltasim Studio 2015
FIVE NATIVE MODELS
CONTENTS

OVERVIEW

SHIYARD SPECIFICATION

FSX SPECIFICATION

SYSTEM REQUIREMENTS

INSTALLATION

FIRST TIME START PROCEDURE

CAPTAIN BRIDGE

FLAG PANEL

ANIMATED PARTS

REMOTE CONTROL UNIT

LIGHTS

LANDING DECK AND HARDENED SURFACES

AI SHIP

SPECIAL EFFECTS

KEYBOARD CONTROLS

TESTS

CURIOSITIES AND STATISTICS FROM WORK

CONTACT
OVERVIEW

The Essex (LHD 2) is the second ship in the all new Wasp-class of multipurpose amphibious assault ships and is designed to carry a full range of Navy and Marine Corps helicopters, Harrier II (AV-8B) Jump Jets, Air Cushion Landing Craft (LCAC), and many other landing craft and amphibious vehicles. She is the 5th ship to bear the name dating back to the frigate which was launched in Salem, Mass. on September 30, 1799. Laid down, 20 March 1989, at Litton-Ingalls Shipbuilding Corp. Pascagoula, MS. Launched, 23 February 1991. Commissioned USS Essex (LHD-2), 17 October 1992 Essex is homeported at San Diego, CA.

SHIPYARD SPECIFICATION

Displacement 40,650 tons (fl.)
Length 844’
Beam 105’
Speed 24 kts.+
Complement 104 Officer, 1004 Enlisted, Marine Force 1894 (plus 184 surge)

Armament:
- two RAM launchers
- two NATO Sea Sparrow launchers
- three 20mm Phalanx (CIWS) mounts
- four .50cal. machine guns

Aircraft:
- twelve CH-46 Sea Knight Helicopters
- four CH-53E Sea Stallion helicopters
- six AV-8B Harrier attack aircraft
- three UH-1N Huey helicopters
- four AH-1W Super Cobra helicopters
- planned capability to embark MV-22 Osprey VTOL tilt-rotors

Propulsion:
- two 600 psi boilers
- two geared steam turbines
- two shafts
- 70,000 total shaft horsepower
FSX SPECIFICATION

LHD moving parts:
Steering wheel, throttle, switches, radars, helm crew, flags, flag boxes, doors, ventilation flaps, stern water hangar lower gate, stern water hangar upper gate, spotlights, elevators, elevator gates, antennas, stern flag mast, bow mast, wipers, front Phalanx, rudders, propellers, tilt the ship (LHD 3).

Controlled animated parts, effects and lights:
- Throttle
- Radars (start, stop)
- Flags (raise and remove - independently, this applies to the main mast and the stern mast)
- Stern water hangar gates (upper and lower - independently)
- Tilt the Ship (LHD 3 as AI only)
- Ventilation flaps
- Doors
- Elevators
- Elevator gates
- Front Phalanx
- Searchlights (3 pcs.)
- Wipers
- Antennas, bow mast, stern mast (as deck clean up function)
- Rudders and propellers
- Repair crew (welders)
- Helm lights (red, white)
- Navigation lights
- Sidelights
- Deck lights (+elevators animated lights)
- Deck night green lights
- Runway lights
- Deck blue lights (edges)
- Stern water hangar lights (green, white - independently)
- Aircraft hangar lights
- Anchors and chains
- New spray effect (depending on the speed)
- New wake effect (depending on the speed)

VIRTUAL COCKPIT
Wheelhouse with full 3D gauges + ship interior (everything above main deck)

ENGINES
Two engines – one touch starters (1+1 independently)
Max speed – 26 + knots with reverse and correct inertia.
MODELS

LHD 2 Empty

LHD 2 Standard

LHD 2 Pro

LHD 3 AI
This is **FSX SP2** native model (with HD textures, effects and sounds in accordance with **FSX SDK**)

Pilotable LHD 2 in 3 versions – empty, standard and pro. The differences: in equipment and capabilities.

AI model in 2 versions: wet hangar for boats and dry hangar for vehicles, hovercrafts.

All models have hardened: main deck, water hangar bottom, aircraft hangar bottom, elevator decks (in lower position)

**LHD 3 as AI – controlled animated parts, effects and lights:**

- Stern water hangar gates (upper and lower – independently)
- Tilt pumps (for ship tilt)
- Wipers
- Elevators
- Elevator gates
- Ventilation flaps
- Stern mast
- Bow mast
- Navigation lights
- Runway lights
- Deck night green lights
- Deck lights (+ elevators animated lights)
- New spray effect (depending on the speed)
- New wake effect (depending on the speed)

The above mentioned features are controlled by Remote Control Unit.

Precise description you can find in the chapter: **Remote Control Unit** and **AI SHIP**

**SYSTEM REQUIREMENTS**

- Windows XP or higher (tested on Windows XP and Windows 7 x64)
- FSX SP 2
- DirectX 9c, DirectX11 or higher (DirectX10 as preview has problem with transparency)
- Fast processor (dual core 3.2 GHz minimum)
- 4GB RAM memory (minimum)
- 1 GB graphic card memory (minimum)
- Joystick or yoke with pedals
- This model works correctly in Prepar 3D v2 and higher. Tested in P3D v.2.5
- Disk space approx. 2.1 GB
INSTALLATION

Start the install program, type your registration code and when it will be shown the window “DIRECTORY” press “NEXT” button if your FSX was installed with default path – as below. If your FSX was installed in other place, e.g. D:\Games\Microsoft Flight Simulator X type your path by hand or press the button then find your path on the local disk.

FIRST TIME START PROCEDURE

- Start with e.g. de Havilland Beaver DHC2 float plane
- Land in the water when you will sail
- Stop and switch off the engine, lights etc.
- Change the airplane with your LHD 2
- Now, wait when the boat tilt gets the correct level (usually – 20-30 sec.)
- Save the flight
- Next time start from just saved flight (load the flight)

SECOND OPTION

If you have any problem with boat stability – use this option. Now you need put your FLIGHT into proper directory.
Go to the unpacked ZIP archive (just downloaded) then find folder: FLIGHT SIMULATOR X FILES – copy and paste it to MY DOCUMENTS folder on your computer. Run FSX and go to the “FREE FLIGHT” window then press “LOAD” and select from the list: DELTASIM LHD 2 and press FLIGHT NOW as below:

To change the position of the boat – select MAP and move your ship where you want (left mouse click) – as below:
Now you can save your new flight as default. If you want to select any LHD, you have set your SELECT AIRCRAFT board as below:
CAPTAIN BRIDGE

Every gauges and switches are described. Very important note: every moving, animated parts operate from the control panel or Remote Control Unit ONLY!. Do not use keyboard for door open, lights etc. otherwise you lost correct parts operation with green-red switch lights indicators.

SHIP CONTROL PANEL

Switches from the left side.

- Anchor left - drop / rise - preview on the screen
- Anchor right - drop / rise - preview on the screen
- Stern upper gate - open / close - preview on the screen
- Stern lower gate - open / close - preview on the screen
- Searchlights animation - on / off - pro version only
- Port elevator gate - open / close
- Starboard elevator gate - open / close
- Elevators animation - up / down
- Clean up animation - folding / unfolding antennas, bow mast, stern flag mast - preview on the screen
- Illumination lights - visible / invisible - pro version only
- Repair crew (welders) - visible / invisible - pro version only
### LIGHTS AND DEVICES PANEL

Switches from the left side.

- Bridge white light - on / off
- Bridge red light - on / off
- Navigation lights - on / off
- Ship sidelights - on / off
- Deck lights - on / off - deck, superstructure, caves, masts, others
- Deck night green lights - on / off
- Runway lights - on / off
- Edge blue lights - on / off - bow deck edge, stern deck edge
- Battery - on / off
- Stern water hangar white lights - on / off
- Stern water hangar green lights - on / off
- Aircraft hangar lights - on / off
- Home function - open / close - ventilation flaps, side doors
- Wipers - on / off - helm only
- Phalanx - fold / unfold - front, for better visibility
- Radars - on / off - rotation

Other gauges end elements of the main panel are described:

- GPS 500, gyro compass, magnetic compass, wind indicator, digital clock, ammeter, voltmeter, visibility indicator, thermometer (C and F), fuel flow indicator, fuel indicator, rudder deflection indicator,
Engines oil temperature indicators (analog and digital), oil pressure indicators (analog and digital), engines RPM indicators (analog and digital), throttle (left, right), latitude indicator, longitude indicator, heading indicator, horn switch, speed indicator, duplicate indicators: rudder deflection, gyro compass, throttle indicator.

FLAG PANEL

The flag panel, is preview monitor to raise and remove 5 courtesy and 3 signal flags-triple nested skin animated which are retractable to the animated boxes.
Flag panel and animated flags works in the pilotable version only. Stern flag with mast is retractable by the CLEAN UP function.

**ANIMATED PARTS**

**Stern gates**

Open and close by the switch from the helm (interior) or Remote control unit (external) - both independently.

**RADARS**

Controlled by the switch from the helm – on / off.
Ventilation flaps controlled by the switch from Remote Control Unit (external).

Side doors controlled by the switch from Remote Control Unit (external).
Elevators are controlled by the switch from the helm (interior) or from Remote Control Unit (external).

PHALANX

controlled by the switch from the helm – for better visibility (interior).
ELEVATOR GATES

Controlled by the switch from the helm (interior) or Remote Control Unit (external).

WIPERS

Controlled by the switch from the helm (interior).
SEARCHLIGHTS

Controlled by the switch from the helm (interior) – animated beams and reflectors – **pro version only**.

DOORS

Controlled by touching the door handle.

WHEELHOUSE CREW

Automatic animated (not controlled) – **pro version only**.
Stern flag mast, bow mast, side antennas
REMOTE CONTROL UNIT

For all pilotable versions LHD 2

- GU - stern upper gate - up / down
- GL - stern lower gate - up / down
- HM - home function - on / off
- AN - anchors - drop / rise
- LF - elevators (lifts) - up / down
- HG - elevator gates - both (lifts) - open / close
- WP - wipers - on / off
- RF - spotlights (static) - on / off
- NL - navigation lights - on / off
- RL - runway lights - on / off
- GL - green deck lights - on / off
- DL - deck lights - on / off

Call, using keyboard SHIFT+1
Remote Control Unit can be moved anywhere on the monitor screen.

LIGHTS

LHD 2 and LHD 3 as AI got absolutely new lights and new light effects.
New properties:

- Removed elliptical axes
- Lights set exactly at the destination
- Lights properly scaled – depending on the distance
- These lights have perfect halo
Lights are controlled by the switches from the main panel (wheelhouse) or from the Remote Control Unit (external view).

**Examples of different lights:**

- **Navigation lights**

- **Runway lights**
Green deck lights

Blue edge lights
Deck lights

Cave lights

Other lights
Elevator deck has animated lights.
Water hangar lights (green and white independently)
Helm lights (red and white independently)
LHD 2 (all versions) and LHD 3 (all versions) have hardened surfaces for landing and parking simobjects.

1 - main deck (the entire surface)
2 - aircraft hangar bottom
3 - elevator deck (both - in the lower position only)
4 - water hangar bottom, driveway and parking (LHD 3 only)
You can land on the deck or enter to the water hangar or park in aircraft hangar and sail wherever you want.

Here, and below you can park your helicopter, inside Aircraft Hangar.

**WARNING !** - Helicopter - Chinook (1 dark) and Bell (1 default), Tanks and Hovercraft are not included in the package.

LHD 3 DRY
Here, you can enter the higher level of Water Hangar and park your vehicle.
You drive inside, then turn off pumps. After a while, the ship returns to the correct level, then close the gate and sail.

**WARNING !** - Boat (PT Boat) and Hovercraft are not included in the package.
AI SHIP

To sail with AI boats you need download and install AICARRIERS 2 as freeware software e.g. from AVSIM, SIMVIATION or FLIGHTSIM. After install procedure, find the software, usually in Program Files (x86), then open aircarriers.cfg (with notepad) copy and paste following lines (red color):

```
[formation.X] // X - your number of formation

title=LHD3 KEARSARGE DRY
unit.0=DELTASIM_LHD3_DRY, -90, 0

[formation.X] // X - your number of formation

title=LHD3 KEARSARGE WET
unit.0=DELTASIM_LHD3_WET, -90, 0
```

In this case, LHD 3 as AI ship, has many controlled parts and lights by the user from pilotable user model with Remote Control Unit.

- GU - stern upper gate - up / down
- GL - stern lower gate - up / down
- PM - tilt pumps - stern down / up
- WP - wipers - on / off
- LF - elevators (lifts) - up / down
- HM - home function - open / close - ventil flaps, side doors
- HG - hangar gates (lifts caves) - open / close
- AN - anchors - drop / rise
- NL - navigation lights - on / off
- RL - runway lights - on / off
- GL - deck green lights - on / off
- DL - deck lights - on / off - deck, superstructure, caves, lifts, others.

To start Remote Control Unit in your (pilotable) model you have copy and paste a piece of code to your PANEL (your pilotable model\PANEL\panel.cfg) – it is very simple, look below:
This is an example panel configuration which I use, copy red color part and set numbers designated as “<”

[Window Titles]
Window00=REMOTE_CONTROL_PANEL <  // range from 00 to 09 – use first free
Window01=GPS_PANEL <
Window02=RADIO_STACK_PANEL <

[Window00] <
file_1024=rclhd.bmp
file_1024_night=rclhd_night.bmp
Background_color=0,0,0
size_mm=432,1024
window_size_ratio=1.000
position=7
visible=0
ident=REMOTE_CONTROL_PANEL
window_size=0.06, 0.282
window_pos=0.002, 0.72

gauge00=deltasim_rc!rc_gate_u, 35,103,76,146
gauge01=deltasim_rc!rc_tilt_pumps, 224,103,76,146
gauge02=deltasim_rc!rc_gate_l, 130,103,76,146
gauge03=deltasim_rc!rc_wipers, 319,103,76,146
gauge04=deltasim_rc!rc_lifts, 35,337,76,146
gauge05=deltasim_rc!rc_home, 129,337,76,146
gauge06=deltasim_rc!rc_hangar_gates, 224,337,76,146
gauge07=deltasim_rc!rc_anchors, 319,337,76,146
gauge08=deltasim_rc!rc_green_deck_lights, 223,571,76,146
gauge09=deltasim_rc!rc_navigation_lights, 34,571,76,146
gauge10=deltasim_rc!rc_runway_lights, 128,571,76,146
gauge11=deltasim_rc!rc_deck_lights, 317,571,76,146

This is 2D panel, called SHIFT+1 (in this case)
======================================
Below you have default BELL 206B example

[Window Titles]
Window00=Main Panel
Window01=Radio Stack
Window02=GPS
Window03=Collective
Window04=Compass
Window05=Mini Panel
Window06=Remote Control Panel  // line added, called SHIFT+7
[Window06]
file_1024=rclhd.bmp
file_1024_night=rclhd_night.bmp
Background_color=0,0,0
size_mm=432,1024
window_size_ratio=1.000
position=7
visible=0
ident=REMOTE_CONTROL_PANEL
window_size=0.06, 0.282
window_pos=0.002, 0.72

gauge00=deltasim_rc!rc_gate_u, 35,103,76,146
gauge01=deltasim_rc!rc_tilt_pumps, 224,103,76,146
gauge02=deltasim_rc!rc_gate_l, 130,103,76,146
gauge03=deltasim_rc!rc_wipers, 319,103,76,146
gauge04=deltasim_rc!rc_lifts, 35,337,76,146
gauge05=deltasim_rc!rc_home, 129,337,76,146
gauge06=deltasim_rc!rc_hangar_gates, 224,337,76,146
gauge07=deltasim_rc!rc_anchors, 319,337,76,146
gauge08=deltasim_rc!rc_green_deck_lights, 223,571,76,146
gauge09=deltasim_rc!rc_navigation_lights, 34,571,76,146
gauge10=deltasim_rc!rc_runway_lights, 128,571,76,146
gauge11=deltasim_rc!rc_deck_lights, 317,571,76,146

These lines added at the very end of the [WindowsXX] section.
For all who will have some problems with that, I will add a complete sample panel.cfg for default BELL 206B in the package.

SPECIAL EFFECTS
LHD 2 USS ESSEX (pilotable) and LHD 3 USS KEARSARGE (AI) got new spray effects – determined by the ship rate (the faster the bigger spray) and new wake effect (it covers the entire length of the ship).

LHD 2 USS ESSEX PRO version (pilotable) got repair crew (welders in 4 places) controlled by the switch - - on / off from the wheelhouse.
LHD 2 USS ESSEX PRO version is illuminated by friendship lights controlled by the switch from the wheelhouse.

KEYBOARD CONTROLS

TRAVEL

SHIFT + ENTER -------------------------- UP
SHIFT + BACKSPACE --------------------- DOWN
CTRL + SHIFT + ENTER ------------------ RIGHT
CTRL + SHIFT + BACKSPACE ------------- LEFT
CTRL + ENTER -------------------------- BACK
CTRL + BACKSPACE --------------------- FORWARD

VIEW

F9 ------------------------------------ VIRTUAL COCKPIT
F10 ----------------------------------- MINI PANEL
F11 ----------------------------------- SPOT VIEW
F12 ----------------------------------- TOP VIEW
A ------------------------------------ TOGGLE CAMERA
S ------------------------------------ TOGGLE VIEW
(-) ---------------------------------- ZOOM (-)
(+) ---------------------------------- ZOOM (+)
SHIFT + (+) -------------------------- ZOOM (+) SLIGHTLY
SHIFT + (-) -------------------------- ZOOM (-) SLIGHTLY
SPACE + MOUSE WHEEL ------------------- THE BEST, QUICK – ZOOM, MOVING, TURNS

VIEW BY CAMERA DEFINITION

INSIDE ------------------------------- F9, A, A, A, A ..........
OUTSIDE ----------------------------- F9, SHIFT + S, A, A, A, A .........

ENGINE

F1 ---------------------------------- POWER OFF
F2 ---------------------------------- REVERSE ENGINE AND QUICK BREAK
F3 ---------------------------------- SLIGHTLY FORWARD
F4 ---------------------------------- FULL THROTTLE

RUDDER STEERING

0 (NUMPAD) ------------------------ LEFT – GENTLY, SENSITIVELY
ENTER (NUMPAD) --------------------- RIGHT – GENTLY, SENSITIVELY
5 (NUMPAD) ------------------------ STRIGHT COURSE

TESTS

Frame test

Machine:

- Intel Core i7 - 4770K 3700 MHz / Z87
- DDR3 Corsair - 1600 - CL9 - 16 Gb
- NVIDIA GeForce GTX 780 - Super JetStream - 6200/1000 MHz - last driver 355.60 WHQL
- factory parts - not overclocked - average system
- WIN 7 64 bit SP1
- Samsung 32' - res. 1920x1080
- FSX - clean, SP2

Settings: (the same for all places)
LHD 2 NIGHT STATIC

LHD 2 ver. Pro - 91 frames/sec.
LHD 2 ver. Standard - 84 frames/sec.
HHD 2 ver. Empty - 98 frames/sec.
LHD 2 DAY STATIC

LHD 2 ver. Pro - 104 frames/sec.
HHD 2 ver. Empty - 112 frames/sec.

LHD 2 NIGHT MOVING

LHD 2 ver. Pro - 62 frames/sec.
HHD 2 ver. Empty - 73 frames/sec.
LHD 2 DAY MOVING

LHD 2 ver. Pro - 59 frames/sec.
HHD 2 ver. Empty - 68 frames/sec.

LHD 3 AI NIGHT STATIC

LHD 3 AI (wet, dry) - 112 frames/sec. (with default helicopter BELL 206B)
LHD 3 AI DAY MOVING

LHD 3 AI (wet, dry) - 59 frames/sec. (with Deltasim PT Boat)

CURiosITIES AND STaTISTICS FROM WORK

- Polygons - 1 293 295 - model pro external
- Vertices - 776 813 - model pro external
- Quantity of executed textures - 2786 - all
- Quantity of used textures - 423 - all
- Quantity of the compilation - approx. 5750 - all
- Disk space for all archived files - 257 GB
- Quantity of spent hours - approx. 2400

CoNTACt

All comments and observations please send an email:
deltasimstudio@deltasimstudio.com
Copyright © 2006 - 2015 Deltasim Studio - All rights reserved