Sikorsky S-92A Helibus for FSX and P3D

This package contains several different variations of the Sikorsky S-92A Helibus. If properly installed, the package will work with both Prepar3D v4 (P3Dv4) and FSX. It will probably work with earlier versions of P3D but has not been tested, since I don't have the earlier versions available to me. It will not work in FS2004; no backward conversion is planned. Variations of finished helicopters included are shown in the pictures below:

Blue Passenger

Bristow Helicopter

Lider Helicopter

NHS (Norsk) Helikopter

Norsk Helikopter

Petroleum Helicopters Inc. (PHI)

In addition, a paint kit showing the texture mapping and a version showing the helicopter in the primer finish during production are included in this package.

Further details about the S-92 can be found at: https://en.wikipedia.org/wiki/Sikorsky_S-92

Installation:

The downloaded package S-92A.zip contains complete files for both FSX and P3Dv4. The installations differ primarily in the cockpit. Some earlier gauges which work in FSX are not supported in P3Dv4. Substitute gauges have been provided for those locations in P3Dv4. The complete directory for FSX, except for textures, has been packaged in the folder S-92A FSX. For P3dv4, the directory is S-92A P3Dv4. All textures have been packaged in the folder Textures. This split was required to keep the package to a reasonable size.

The following instructions are for installation in FSX:
1) Copy the entire folder S-92 FSX as a folder to Sim Objects\Rotorcraft in your FSX top-level directory. Usually that is C:\Program Files (x86)\Microsoft Games\Microsoft Flight Simulator X.
2) Open the Textures folder.
3) Copy the individual texture folders inside the folder S-92 FSX. Do not copy the entire Textures folder as a folder here, because the software will not find the aircraft textures and the helicopter will not work properly. If done correctly, the folders texture, texture.lider, texture.nhs, texture.norsk, and others will show up in the FSX directory.
4) Installation is complete.
5) To easily find the new aircraft, filter on Publisher and select my name (David Allan). A total of eight different variants should appear.

The following instructions are for installation in P3Dv4:
1) Copy the entire folder S-92 P3Dv4 as a folder to Sim Objects\Rotorcraft in your FSX top-level directory. Usually that is C:\Program Files\Lockheed Martin\Prepar3D v4.
2) Open the Textures folder.
3) Copy the individual texture folders inside the folder S-92 P3Dv4. Do not copy the entire Textures folder as a folder here, because the software will not find the aircraft textures and the helicopter will not work properly. If done correctly, the folders texture, texture.lider, texture.nhs, texture.norsk, and others will show up in the P3Dv4 directory.
4) Installation is complete.
5) To easily find the new aircraft, click on Change Vehicle and look for S-92A Helibus. A total of eight different variants should appear.

Certain instruments in the FSX cockpit require download due to proprietary restrictions, primarily the Auto Hover and Helicopter Autopilot (HAP). HAP can be found on flightsim.com by looking up "FS2004 Helicopter Autopilot". The Auto Hover gauge by Arne Bartel is included in "FS2002 Hong Kong Goverment AS332L2" (sic). Copy exactly including the misspelling or the search will not work. These gauges should work in either the Panels directory or the general Gauges directory. These gauges will not work in P3Dv4.

If instruments in the cockpit appear to be missing for P3Dv4, the most likely cause is mixing up the installation (putting the FSX version in P3Dv4). For FSX installs, if additional instruments besides Auto Hover and HAP are missing, the cause may be the same issue (P3Dv4 version in FSX). Please confirm the folder aligns with the version before reporting problems.

Cockpit:

This aircraft features both 2D and 3D cockpits. The 2D cockpit is shown in the figure on the next page. The general appearance of the cockpit (5 Multi-Function Displays, an Overhead Console, Center Console, Collective, Cyclic, and panel shape) replicate the actual S-92. The individual displays have been reused from existing standard aircraft included with FSX, particularly the Lear jet and Boeing 737. Note the Float Switch that inflates and deflates the Emergency Flotation System (EFS). Automatic repacking of the floats is not realistic, but then models never fully represent reality!

An inset of the buttons is shown in the upper right of the figure above. The numbers on the buttons correspond to the functions listed below:

1) GPS Display/Hide
2) Kneeboard Display/Hide
3) Map
4) Air Traffic Control Display/Hide
5) Radio Panel (includes Auto Hover for FSX) Display/Hide
6) Overhead Panel Display/Hide
7) Center Console Display/Hide (includes analog instruments)
8) Collective Display/Hide
9) PFD & MFD Enlarged Display

From left to right above, items 5, 7, and 8 are displayed.

Note that on the FSX version, Shift-9 opens the Autopilot. It has no effect in P3Dv4.

Virtual Cockpit Views:

The entire cockpit and cabin of the aircraft have been included in the aircraft models. The pre-programmed views follow:

Virtual Cockpit View

Virtual Cockpit Only

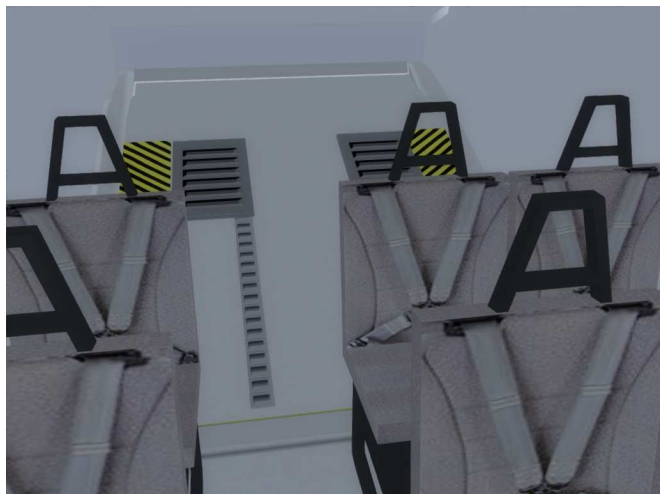Left Seat

Center Console

Overhead Console

Moving Map/GPS

Side Door

Rear Door

The above picture shows the aircraft cabin. All aircraft are in the standard 19 seat configuration (1 aft facing seat plus 6 rows of 3 seats).

Exits, Engine & Auxiliary Power Unit (APU) Covers, Electrical Cut-off, and Crew:

The aircraft has four different exits, the first three being realistic exits and the fourth exit added a modeling aid. The fourth exit may be disabled by commenting it out in the aircraft.cfg file. The exits are listed below:

Shift-E-1   Rear (Cargo Door)
Shift E-2   Side (Main Entry Door)
Shift E-3   Emergency Exit
Shift E-4   Pilot and Co-pilot Doors (not realistic, actually jettisonable windows)

Shift-M toggles the electrical power to the aircraft. When the power is off, the engine and APU covers are installed. The crew has left the aircraft. Toggling again restores electrical power, removes the covers, and restores the crew to the aircraft. It is does not affect rotor spin or engine power. These features are shown in the following illustration.

Flotation:

This helicopter can be repeatedly land and take-off from the water. The floats are deployed by the Float switch in the Overhead console as shown previously. In the model, the floats are purely cosmetic and do not affect the aircraft's behavior. In reality, the floats are an emergency landing aid only and are not reused, and the helicopter does not take off from the water again. The helicopter floating in the water is shown below:

Flight Model:

The flight model for this aircraft is based on the FSX Acceleration EH-101. The aircraft.cfg file has been modified to reflect the S-92A characteristics as closely as possible. The new flight model has two problems that have not been fully eliminated:

1) The engine rpm and fuel consumption vary over time, especially on the ground. Experimenting with the governor_pid variable has helped with the problem but not completely eliminated it.
2) The aircraft also weathercocks like a wind vane in high winds at high airspeeds. Experimenting with yaw_stability_cf did not eliminate the problem.

The aircraft flies almost the same in FSX vs. P3Dv4. The major difference is that no autopilot or auto-hover is available for P3Dv4.

FSX vs. P3Dv4 Appearance:

The aircraft appearance is very similar between FSX and P3Dv4. The main difference is the P3Dv4 renders shadows and direct sunlight much better than FSX. The same aircraft in P3Dv4 will have a higher level of gloss than in FSX.

The FSX version aliases to sound files from the EH-101. The P3Dv4 aliases to sound files from the UH-60.

Source Data and Acknowledgments:

All source data from this package came from publicly available sources on the internet. It is not endorsed by and did not have the aid of Sikorsky Aircraft or any of the other companies whose aircraft are represented here.

This package relies extensively on gauges included within FSX Acceleration, particularly for the Learjet and B737. The P3Dv4 version references some default gauges contained within.

The entire package was built using Abacus FSDS v3.5. The plug-in FSDS Tweak was used for post-processing, especially for gloss and transparent textures. DXTBmp was used for texture conversions.

Model Converter X was used to fix the coordinate problem with the flotation. Flightsim.com's forum was helpful several times with development problems.

The pilot and copilot models were modified from versions originally created by Dave Eckert.

Apologies in advance to anyone missed in the acknowledgments.

Future:

Plans exist for making a Coast Guard package and military package (CH-148, VXX Presidential, Others). Expected release is some time in 2020.

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