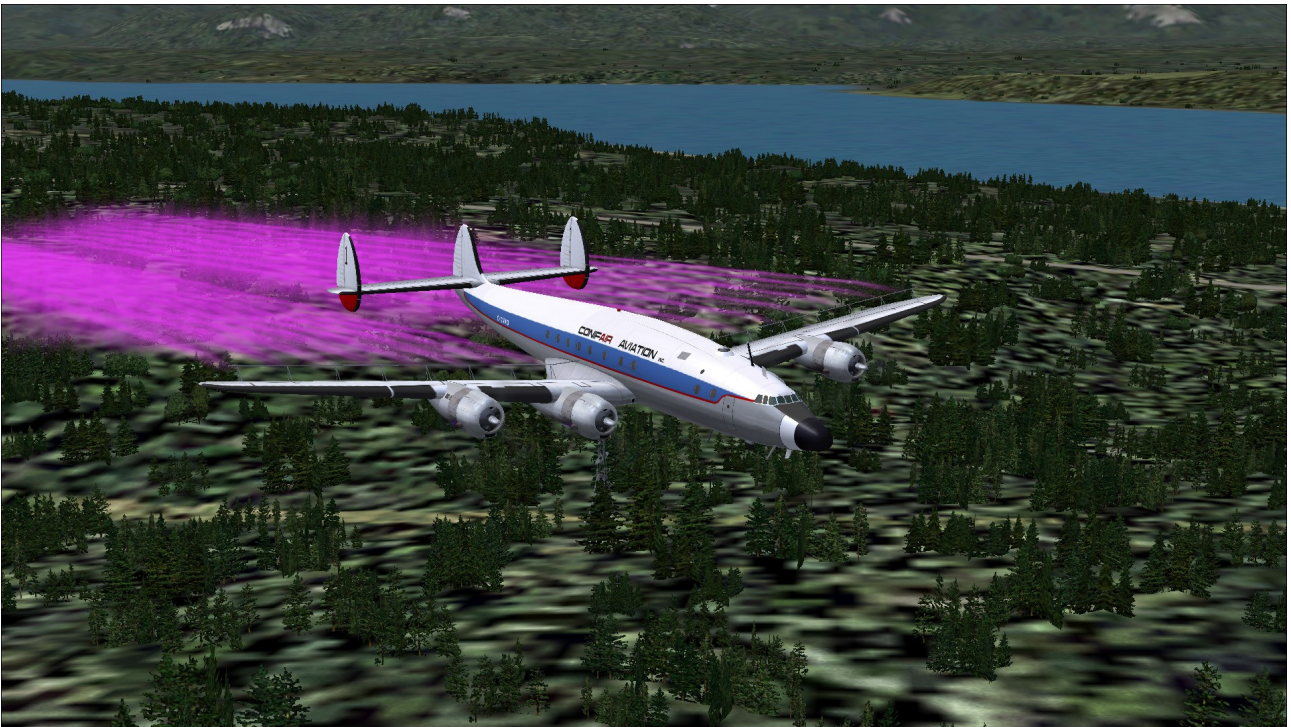


Lockheed L-749A Insecticide Sprayer for Flight Simulator 9



Maybe you have seen the pictures of smartly painted Constellations spraying colorful fluids over dark-green forests. A spectacular sight, no doubt. Maybe you thought, 'what a neat idea to just spray from the air.'

Wait. Think again.

It is hard and difficult work to do so correctly. Spraying was done at 50-150 ft height, about the aircraft's span, and at high speed. There is little room for error and the Constellation is no slow, nimble biplane Stearman crop duster.

Now, you've got a chance to simulate this kind of flying in FS. Here is a conversion of the basic Lockheed L-749A model, panels and flight dynamics to an insecticide sprayer. It allows simulation of the Constellation as an insecticide sprayer, including spray operations with custom visual effects and changes of aircraft weight and handling during the dump.

Historical background:

Christler Flying Services of Thermopolis, WY, converted 4 L-749A aircraft as aerial sprayers. The conversion to a spray plane consisted of two tanks of 1'800 USG, pumps and a set of bars slightly above the wing to disperse the load. Both liquid and solid loads could be dispensed. An altitude of 150 ft resulted in a spray swath of 750 ft width - wider than other aircraft types. A DC-4/6/7 would only cover around 600 ft width. To allow the necessary precise navigation, a Litton LTN-51 inertial navigation system (INS) system was installed.

The aircraft were used from 1971 to 1978 to spray insecticides in several states of the USA and in Quebec Province, Canada. Three of these aircraft were then acquired by Beaver Air Spray and two of them were operated by its subsidiary, Conifair Avitaion of St. Jean, PQ, Canada. They were used for budworm spraying in

Quebec from 1980 to 1983, along with a number of DC-4s and DC-6A/Bs. In Quebec, malathione was used and the spray liquid would be a mixture of insecticide, diesel fuel as a solvent and purple dye to allow better visual control of the dump. One aircraft (c/n 2609, reg. C-GXKS) was damaged beyond repair during an emergency landing when the hydraulic system failed and the aircraft overran the runway at Rivière du Loup, PQ, Canada.

Aircraft Specialties of Phoenix, Arizona, converted 2 Constellations and 4 Super Constellations in a similar manner, with 4'000 USG tank capacity for the Super Constellations. The aircraft were used in New York, New Brunswick and Quebec until 1985.

The period in which these aircraft were used was short, a few weeks only every year. Therefore, the aircraft had all been retired by the mid 1980s, even though in some cases spraying continued for a few more years with Douglas aircraft, which were less expensive to operate. It did make a difference, though. The aircraft had been put to use during a period in which most of the existing classic propeller-driven airliners had been scrapped.

Four out of seven Constellations and two out of five Super Constellations converted to aerial flying still exist, and some of them airworthy, a number out of proportion of the total number of the Constellation series – 52 survivors out of a total of 856 aircraft (C-69 to L-1649A).

Simulating the aerial spray operation:

This package contains a Lockheed L-749A Constellation modified for aerial spraying. It is fitted with a tank of 3'600 USG which can be dumped at a rate of about 300 USG/minute. The insecticide tank is set up as a fuel tank. Its content can be dumped but is unavailable for the engines.

The spray operation is controlled by a switch on the windshield, next to the autopilot and can be stopped or started as often as desired. A content gauge for the spray tank is available in the upper right corner of the FE panel. Fuel dump for emergencies is still available by operation of the overhead dump switches. These switches move in synch and dump fuel from all tanks. Dumping is possible only in FS9, not FSX.

For navigation, a inertial navigation system (INS) is available instead of the default GPS, but requires a separate download. Please see installation notes below and the operating instructions included in the download. This INS uses FS flight plan data for waypoints.

For head-up use, a Track Deviation Indicator is installed instead of the default clock. An active flight plan is required. The upper needle shows the heading deviation from desired course to intercept and fly the required track. Scale is -30° to +30°. Just turn the plane to keep the needle centered. At the bottom of the gauge you find a classical Course Deviation Indicator (CDI) style dot. The scale is 0.5 NM for full deviation, when the CDI is centered you are on track.

The visual model shows the spray bars and activating the spray switch will show the dyed spray. Due to limitations of FS, activating the fuel dump will show no fuel dump effect. The flight dynamics have been altered to take account of the increased drag due to the spray bar installation. The change is relatively subtle and might have been much more pronounced in real life.

In actual operations, spraying was performed at 50-150 ft altitude above ground. It would require clear weather and calm air for precise placement and usually only a few flights were done in the morning, when the air was most settled, and

another one in the evening, if possible. A normal load was around 2'000 USG, which would leave the aircraft below MLW. Spray blocks were planned beforehand and were usually several miles long, almost certainly parallel to the terrain profile, and blocks set up about 3'000 ft apart, the normal turn radius of the Constellation.

Here's a report about the operation of this aircraft:

<http://www.ruudleeuw.com/con-conifair.htm>

This package contains the textures for Conifairs Constellations, the aircraft described in the article.

Enjoy the experience!

Installation of the aircraft:

1. The standard L-749 installation should be installed already. No files will be overwritten by this package, but some gauges of the base pack are required.

2. Download the "ins_gauge_v2" INS gauge by Julian Avisenis from this source:
<http://www.flightsim.com/vbfs/fslib.php?do=copyright&fid=151042>

To install the gauge, you need only to copy the gauge 'JMA_INS.gau' from the downloads 'Gauge' folder either into the FS9/Gauge folder or into the panel folder of this aircraft. No need to modify the panel of this aircraft.

3. Unzip this pack into a temporary location. Place the content of the folders 'Aircraft', 'Gauges' and 'Effects' into the respective subfolders of FS9.

4. Optional: The sound is aliased to the default DC-3. You may replace it with custom sounds for the Lockheed Constellation available here:

<http://www.calclassic.com/sound.htm>

5. Optional: Additional textures for Christler Flying Services can be downloaded from Flightsim.Com:

<http://www.flightsim.com/vbfs/fslib.php?do=copyright&fid=168501>

<http://www.flightsim.com/vbfs/fslib.php?do=copyright&fid=168188>

6. Done.

Credits:

This package is created by Volker Böhme, Luis Pallas, Bill Tyne and Stefan Werner. Conifair textures by Mark Rogers and used with kind permission.

Original release version by Manfred Jahn and Team 749.

VC textures by Jan Visser.

Support can be found at the CalClassic Forum, hosted at the California Classic website by Tom Gibson:

<http://calclassic.proboards.com/index.cgi?board=general>

The Constellation Team

February 2013

v (dot) boehme (at) web (dot) de