MILITARY VISUALIZATIONS

DHC-2 BEAVER

SPRAY N' PLAY EXPANSION PACK

PRODUCT MANUAL

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Welcome to the Spray n' Play Expansion Pack for the award winning MilViz DHC-2 Beaver.

When studying the history of the venerable Beaver, one of the most striking impressions you walk away with is just how useful this individual aircraft was. Designed in every way to be a workhorse, the multitude of roles this aircraft excelled in is simply staggering.

A large production run and a long service history, coupled with a lasting durability that will see the Beaver continuing to fly for perhaps decades to come, means that this aircraft holds meaning for a very large cross section of people from all walks of life.

Of course, the varied purpose of the Beaver, from military transport to crop duster, from a hard working bush plane to a restored museum centrepiece, has the result that the meaning it holds is different for each and every one of us.

One of the challenges when developing such an aircraft for any simulator is to balance feasibility with wishes and desires. With a multi-role aircraft, it becomes a matter of picking and choosing what to include and what, by matter of necessity, must wait for later, for another time, or another aircraft.

Well, we are pleased to report that 'later' has now arrived, in the form of an expansion pack for the MilViz DHC-2.

We've listened to the feedback of our customers since the release of the MilViz DHC-2 and we've spent a considerable amount of time not only perfecting the base aircraft (which will of course continue well into the future, as our customers have come to know), but also determining what would be both interesting and popular enough to put together to offer as an addition to the aircraft.

And... although we're sorry to say that we're not about to install wing-mounted rocket launchers on our lovely Beaver anytime soon, we have come up with a very interesting assortment of additions to the MilViz DHC-2 which we hope you will find every bit as entertaining & enjoyable as we do!

1.1 Special Features

- Standard DHC-2 Beaver equipped with straight floats.
- Barron STOL kit, including drooping wing tips, lowered leading edge, wing fences and gap seals.
- STOL kit included in combination with straight floats, standard & tundra wheels and ski equipped models.
- Crop-dusting version of the DHC-2 Beaver, featuring dynamic weight adjustment and unique livery.
- Unique and specifically tailored flight models for each aircraft configuration.
- Selectable pointed propeller cover for all versions of the aircraft.

1.2 System Requirements

The DHC-2 Beaver Spray N' Play Expansion Pack is **not** a standalone version of the MilViz Beaver. It requires an up-to-date and functional installation of the full aircraft to be present prior to use.

All system requirements for the Expansion Pack match those of the base aircraft, with only exception being that installing the Expansion Pack will increase the space requirements of the overall DHC-2 Beaver package in the simulator by approximately 3 GB.

1.3 Installation Instructions

Important: As with other flight simulator addons, pre-installation precautions should involve closing other open applications, as well as temporarily disabling any active antivirus software. Please be sure to remember to re-enable your antivirus software after installation!

Installation of the Spray N' Play Expansion Pack follows the same format as the aircraft, in that after purchase, you will have been given a link or an option to download a zipped (.zip) file. This compressed file contains an executable (.exe) file, which is the installer for the Expansion Pack . The method of installing the Expansion Pack mirrors that of the base aircraft; you may refer to Section 2.2 of the full MilViz DHC-2 Beaver operating manual for a typical walkthrough of the installation routine if needed.

Please remember when beginning installation to right click on the executable file and select "Run as administrator".

1.4 Straight Floats

The straight float models offered by the DHC-2 Beaver Extended add both a standard Beaver equipped with straight floats as well as a STOL modified model also equipped with straight floats.

The original DHC-X as designed by de Havilland Canada was first envisioned as a float plane. Indeed, the horizontal lines of the aircraft seem transform when sitting on floats; it becomes graceful rather than muscular.

1.4.1 Operation

As we have used a highly abridged and streamlined version of the original DHC-2 flight manual for the full MilViz DHC-2 Beaver operating manual, it is recommended to refer to those sections for familiarization, proper procedures and operation of the MilViz DHC-2 when equipped with straight floats. While on water, there are very few operating differences from the amphibious version included in the base package.

Of course, you should always remember that you are now restricted to water operations only!

1.4.2 Command Assignments

For ease of operation, you are able to raise or lower the water rudders via the keyboard (Default: CTRL+W), by assigning the 'Water rudder (up/down)' command to a joystick button., or by clicking the water rudder cable handle located under the fuel selector.

1.5 STOL Modification Kit

STOL (Short Take Off and Landing) wing modifications are one of those features that screams 'look at me!". Visually arresting, the drooping wing tips present on an aircraft signal at least an intention (if perhaps not always the capability) to be serious about a short take-off and landing roll.

One of the more common kits produced for the Beaver was likely the Barron STOL kit. Manufactured for both the Beaver as well as in part for the DHC-3 Otter, it consisted of the aforementioned drooping wing tips, a leading edge replacement, wing fences and a flap gap seal.

1.5.1 The Marketing Pitch

While the flying characteristics of the Beaver are generally regarding as being quite satisfactory, the modifications were intended when combined to give enhanced performance.

It was claimed that while each individual modification improved performance and handling slightly on their own, the combination of all four notably improved the climb rate, wing lift, stall recovery, increased stability on approach, greater slow speed maneuverability, as well as improving the flying attitude at cruise speed.

In practice, however, very little of the above is provable within the scope of documented testing. The degree of how much might be improved by such additions is largely a matter of speculation. In the words of the author of the flight model for our Beaver (who himself has had hands-on experience in a Barron kit equipped Beaver): ***It's better at getting off the ground then "less better" from that point on.***

As far as looks go, however, there's no denying that it certainly adds a certain amount of appeal!

1.5.2 The Design

The modifications known as the 'Barron kit' consist of the following when installed on the DHC-2 Beaver:

A leading edge cuff, extending from the top of the wing in a convex profile about 2 inches forward and roughly 4 inches down. This cuff is made from polyurethane blocks cut to the desired contour, attached to the wing and covered with 0.032" thick aluminium. The newly modified leading edge is intended to help improve the attitude of the aircraft during climb and acceleration.

Replacement wing tips made of fibreglass, intended to smoothly fit with the leading edge modification. The droop profile is believed to allow the aircraft to have greater maneuverability at slow speeds by keeping air over the aileron surface. This could be beneficial in situations where there is turbulence at low altitudes and where aileron effectiveness is reduced due to turbulence or the attitude of the aircraft.

The flap gap seal modification is used to cover the gap between the flap and the trailing edge of the wing. This seal helps to prevent the passage of moving air through the gap when the flaps are extended and is intended to assist the stability of the aircraft in flap extended flight.

The final modification is a 2" stall fence, matching the profile of the wing, installed just outside of the flap area.

1.5.3 Included STOL Aircraft

The following models have been outfitted with STOL wing modifications and included in the DHC-2 Beaver Extended package:

Landplane with standard wheels
Landplane with tundra tires
Floatplane with straight floats
Landplane with retractable skis

1.5.4 Operation

Once the DHC-2 Beaver Extended package has been installed, the additional STOL variants will show up as separate models in the aircraft selection screen within the simulator. All selections made in the MVAMS utility regarding cargo or passenger loadout selections, visibil-

ity options, or avionics choices will carry over to these aircraft in the same manner as the rest of the MilViz Beaver fleet.

In regards to operational differences of the STOL equipped aircraft:

The emulated STOL wing modifications which have been installed on real DHC-2 Beavers are a modification that occurred decades after production of the DHC-2 had ceased. As such, there exists no factory documentation of any possible differences in handling or operation of the modified aircraft, nor any modified procedures. Officially, the recommendations laid out in the flight manual are still valid.

It is common for identical aircraft across a range of types to have differing flight characteristics. This tendency only increases with age. No two Beavers fly the same; it is always up to the pilot to learn become accustomed to the particular aircraft they are flying.

This practice carries over to modifications such as what we've emulated. You will notice some slight differences in handling and performance; but just as in a real DHC-2 with wing modifications, there are no official charts or numbers to go by. It will be completely up to you as the pilot to become familiar with your modified aircraft and take it on new adventures!

1.6 Crop Dusting Model

The other major addition to the MilViz Beaver that is included with the DHC-2 Beaver Extended package is a version of the aircraft equipped with fully functional crop dusting equipment.

Agricultural usage of the DHC-2 Beaver goes all the way back to the introduction of the aircraft. Straight from the factory floor in Downsville, customers could equip a new Beaver with DHC produced equipment including hoppers and dumping mechanisms for topdressing (a term generally used in conjunction with the aerial application of fertilizer) and hoppers or tanks in combination with ram air powered spraying booms for crop dusting. There was even the possibility of outfitting the Beaver with wing mounted drop racks for doing such tasks as dropping fence posts in remote regions!

1.6.1 Operation

The DHC-2 Beaver Extended package, when installed, adds a single version of the DHC-2 Beaver (with all liveries, plus an extra custom livery) that has been equipped with a generic spray boom and liquid tank. This model variant is selectable from the aircraft selection screen within the simulator.

Selections made in the MVAMS utility on the 'Load' tab regarding passenger / cargo versions are not used, since the crop dusting variant is only available with the same fuselage style as used on the cargo loadout. However, selections made on the remaining tabs ('Radios', 'State', 'Visual') are persistent though this model variant.

Operation of the crop dusting equipment is designed to be uncomplicated. The control panel, consisting of a quantity gauge and control handle, is located on the cabin floor to the right of the pilot's seat. By clicking on the red control handle while in flight, you may toggle the spraying function on and off. When the handle is in the up position, the sprayer is operating. This can be confirmed by the moving needle on the quantity gauge. When the handle is in the down position, the sprayer is off.

1.6.2 Command Assignments

In addition to operating the sprayer with the mouse, you may also operate the sprayer with the command assignment for 'Ballast valve (open/close)', followed quickly by pressing the 'I' key. There is no assigned key by default to the command for 'Ballast valve', so either a keystroke or a joystick button could be assigned.

CREDITS

Development

Colin Pearson - Creative Director
Tom Falley - Flight Dynamics
Chuck Jodry - Lead Code
Tom Aguilo - Systems Code
Mike Maarse - Sound Engineer
Brandon Filer - AMS Code
Collin Biedenkapp - AMS Updater
Gunnar van der Meeren - Livery Artist
Jim Stewart - Manual
Ville Keranen - Videographer
Yoyo - Imagery

Peter Krause (SoulMade Simulations) - Initial Model & Textures
3DR - Model & Textures

Testers

Mike Cameron, Vassilios (Dimus) Dimoulas, Ryan Butterworth, Robbie Nauffts

WX Advantage Radar included courtesy of MilViz & REX Simulations
XMLTools included courtesy of Tom Aguilo