

Recorder module for FS2004 version 1.2

Copyright © 2004-2006 Matthias Neusinger

Disclaimer

Use this software on your own risk. I will not take any responsibility for problems or damage caused by it!

This module is freeware. It may be freely distributed, as long as no money is charged for it and no modifications are made to the package. Commercial use is not allowed without written permission of the author!

Refer to the [support](#) chapter at the end of this document, if you have any problems or want to contact the author, or if you want to support the development by a donation.

Introduction

This module can record flights, save them to files and play them back like the FS instant replay and flight video recorder, but with a lot more features. **This version only works with FS2004 and was only tested with the 9.1 update installed!**

The module does NOT record video files (like .avi), it records data like aircraft position, speed, etc, so the recordings can only be played inside FS. This has the advantage, that you can watch your recordings from different views.

List of main features:

- recording flights of unlimited length
- replay the last minutes, even if no recording was started
- jumping/searching forward/backward during playback
- playback control via keyboard or control window
- stop playback at any position to continue manually
- loop part of a recording
- change playback speed
- custom keyboard controls
- recorded data is customizable

Furthermore the module includes advanced view features for the tower and spot plane views:

- multiple tower/spot views, which can be selected via the menu or keyboard
- optional manual panning of the view direction
- automatic zooming
- saving/loading sets of tower and spot views

Installation

Copy the file *Recorder.dll* into the *Modules* folder of your FS2004 main directory and start FS. Before using the module you should read this manual, as it contains some important notes!

Uninstalling

If you want to uninstall the module, just delete the file *Recorder.dll* from your FS2004 modules folder. You can also delete the file *Recorder.ini*.

Using the module

The module is used via the *Recorder* entry in the FS2004 main menu and via keyboard shortcuts.

Recording a flight

To start recording select *Record* from the *Recorder* menu. The following dialog window shows up:



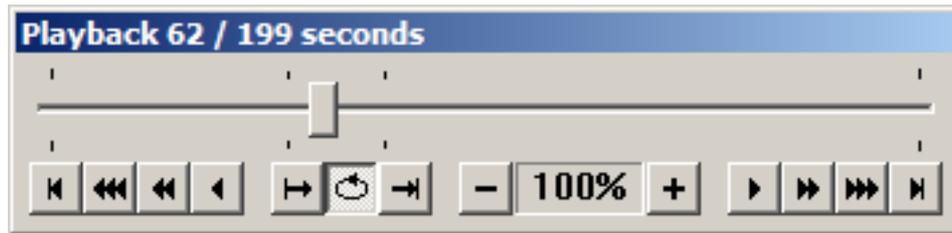
You can select one of five recording intervals, 1/8, 1/4, 1/2, 1, or 2 seconds. Smaller intervals will result in a larger size of the recorded file, but also in a more accurate and smooth playback of the flight. There is also an option to automatically stop recording a certain time after touchdown, engine shutdown or start of recording. Pressing the *OK* button starts recording. If the *Display recording* option is checked in the [settings dialog](#), *Recording* will be displayed on top of the screen during recording.

To stop recording select *Stop recording* from the *Recorder* menu or press the *ESC* key. When recording is stopped either manually or automatically, a standard file selection dialog appears. Entering a file name and pressing the *Save* button will save the flight to the file and stop recording. If you press the *Cancel* button, you will be asked, if you want to continue recording. Choosing *No* discards all recorded data, while *Yes* continues recording until you select *Stop recording* or press *ESC* again.

Playing back a recorded flight

To play back a flight recorded with this module, select *Play* from the *Recorder* menu. This opens a standard file selection dialog. Select the recording you want to play and press the *Open* button to start playback. If the *Display playback/replay* option is checked in the [settings dialog](#), *Playback* will be displayed on top of the screen, together with the number of played and total seconds.

If you enabled the *Show window during playback* option in the [settings dialog](#) (disabled by default), the playback control window will show up:



You can move this window to any position you like, the module will remember that position, when it's shown the next time.

The playback control window can cause a drop of frame rate on your system, if FS is running in fullscreen mode (maybe also in windowed mode?). If you experience bad frame rates during playback, try to disable the playback control window.

Slider

The slider shows the current playback position. If [looping](#) is active, the loop start and end points are shown as ticks. The slider can be moved by clicking or dragging with the mouse to search within the recording.

Jump/search buttons

You can jump or search forward or backward through the recording using the following buttons or keys:

Button	Default key	Function
⏪	Home	Jump to beginning
⏮	Page Up	Jump/search backwards 3
⏭	Up Arrow	Jump/search backwards 2
⏩	Left Arrow	Jump/search backwards 1
⏪	Right Arrow	Jump/search forward 1
⏭	Down Arrow	Jump/search forward 2
⏮	Page Down	Jump/search forward 3
⏭	End	Jump to end

The three jump/search modes and speeds can be set in the [settings dialog](#).

Looping

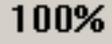
You can loop a part of the recording using the following buttons or keys:

Button	Default key	Function
	Numeric /	Set loop start point
	Delete	Toggle looping on/off
	Numeric *	Set loop end point and start looping

Turning on looping without setting start and end points before will loop the whole recording. The start and end points of the loop are shown as ticks on the slider.

Changing playback speed

You can change the playback speed using the following buttons or keys:

Button	Default key	Function
	Numeric -	Decrease speed
	Insert	Reset speed to 100%
	Numeric +	Increase speed

The following speeds can be selected: 10%, 20%, 33%, 50%, 100%, 200%, 300%, 500%, 1000%.

Stopping playback

To stop playback, select *Stop playback* from the *Recorder* menu, press the *ESC* key or turn off looping and press the *jump to end* button or key. The last second of the recording will always be played before playback stops. At the end of the recording playback will automatically stop and FS will pause, if *Pause at end* is turned on in the [settings dialog](#).

If you want to stop playback without jumping to the end of the recording, to continue the flight manually from the current position, press *Shift+ESC*. **As not all data is recorded by the module, this does not always work as expected and can result in a crash, if the aircraft is not set up correctly at the moment where you abort playback!**

Playback using a different aircraft model

When playing back a recorded flight, the same aircraft, which was used during recording, should be used. In some cases, however, this might not be possible, e.g. if you want to play a recording, which somebody else made with a commercial addon aircraft, which you don't own. Of course it should be at least a similar aircraft, it doesn't make any sense to play back a 747 flight with a Cessna.

However, even if you use just a different model of the same aircraft (e.g. a freeware 767 to play a flight made with a payware 767), there is the problem, that the height of the reference

point of both models usually is different, which would result in the wheels floating above or sinking into the ground. To avoid this, since version 0.8 the module saves the height of the reference point together with the recording, and corrects the recorded altitude data during playback. In case this doesn't work perfectly, you can also fine tune the correction using the *increase/decrease height correction* keyboard shortcuts. The default key combinations are:

- Shift + (Numeric +): increase height correction
- Shift + (Numeric -): decrease height correction

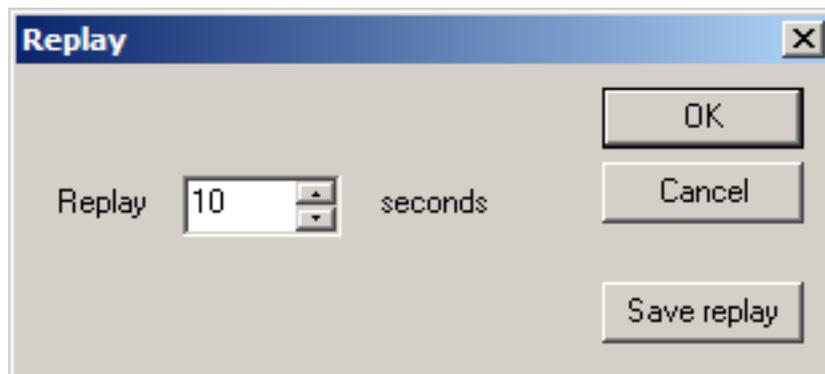
Play as traffic

This feature allows you to play back a flight you recorded using a different (AI) aircraft instead of the user aircraft. To use it, select *Play as traffic* from the *Recorder* menu and choose a recorded flight in the file selection dialog. A new aircraft will be created (which is a copy of the currently loaded user aircraft) and will fly the recorded flight. At the end of the recording the aircraft will be deleted.

Using the jump/search controls or increasing playback speed (described in the previous chapter) can result in the aircraft disappearing before the end of the recording! This happens, because FS deletes the aircraft, if it gets overstressed, which can happen when jumping or increasing playback speed.

Replaying the last minutes of your flight

If replay is enabled in the [settings dialog](#), you can always play back the last minutes of your flight, even if you didn't start a recording before. To replay the last minutes of your flight select *Replay* from the recorder menu. The following dialog opens:



Enter the number of seconds you want to replay and press the *OK* button to start replay. If the *Display playback/replay* option is turned on in the [settings dialog](#), *Replay* will be displayed on top of the screen, together with the number of seconds remaining. During replay the same features as described in [playing back a recorded flight](#) are available.

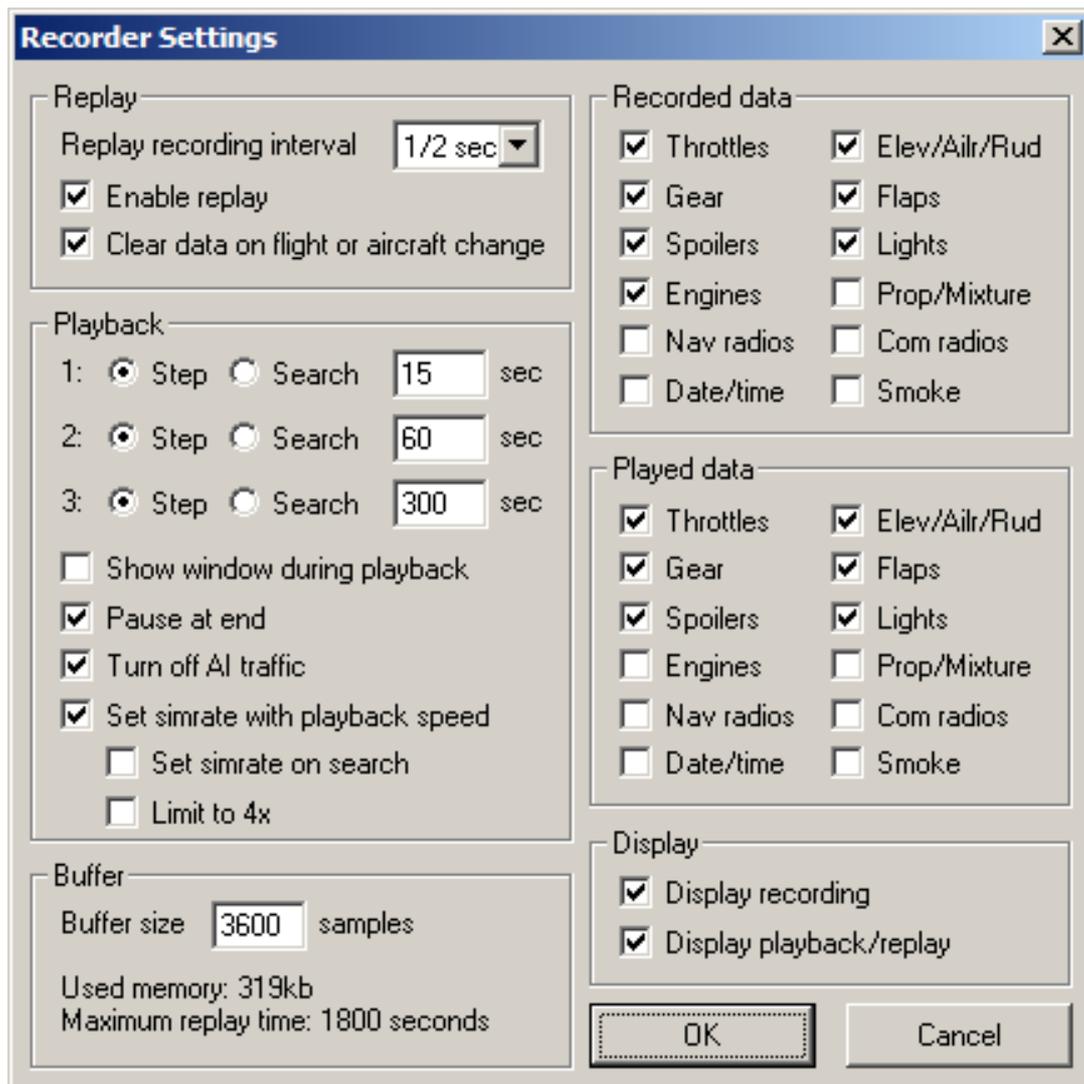
Using the *Save replay* button in the replay dialog you can save the entered number of seconds to a file for later playback.

The maximum available replay time depends on the buffer size and the replay interval set in the [settings dialog](#).

All replay data is cleared, when you record a flight, play back a saved recording, or change settings in the settings dialog. If *Clear data on flight or aircraft change* is checked in the [settings dialog](#), replay data is also cleared when you select/reset a flight or select a different aircraft.

Settings dialog

To access the settings dialog select *Settings* from the *Recorder* menu:



The following options can be set in that dialog:

Replay recording interval

Select the time interval for replay recording here. Shorter intervals result in a more accurate playback, but require more memory, which shortens the maximum available replay time.

Enable replay

This option has to be checked, if you want to use the replay feature. If it is checked, the module will always record replay data, except when recording or playing back a file.

Clear data on flight or aircraft change

If this option is checked, all replay data will be cleared, if you load a different aircraft, or load a new/reset the current flight.

Step/Search 1/2/3

Here you can configure the modes and step sizes/speeds, for the different jump/search buttons/keys described under [playing back a recorded flight](#). If you select the *Step* mode, playback will jump by the entered number of seconds each time you press the appropriate button/key, while in the *Search* mode playback speed will be increased by the entered factor while you keep the button/key pressed.

Show window during playback

If this option is checked, the [playback control window](#) will be shown during playback and replay.

The playback control window can cause a drop of frame rate on your system, if FS is running in fullscreen mode (maybe also in windowed mode?). If you experience bad frame rates during playback, try to disable the playback control window.

Pause at end

If this option is checked, FS will pause when playback ends.

Turn off AI traffic

This option turns off the AI traffic during playback. If it is disabled, AI traffic will continue during playback, but will usually be different from the traffic during recording.

Set sim rate with playback speed

If this option is enabled, the simulation rate will be set to the same factor as the playback speed. When you change the playback speed, this option has the advantage, that flaps, gear, AI traffic, etc. will move with the correct speed.

Set sim rate on search

If enabled, the simulation rate will also be increased during searching.

Limit to 4x

If the simulation rate is set to more than 4x, FS will disable the AI traffic. To prevent frequent disappearing and reloading of AI traffic, when searching or changing playback speed and *Set sim rate with playback speed* is enabled, this option limits the adjustment of the sim rate to a maximum of 4x.

Buffer size

All recorded data is first written to a memory buffer. When the buffer is full, then

- when recording a flight, the data is written to the file
- when recording for replay, the oldest data is overwritten.

You can enter the size of the buffer here. Using small values requires less memory, but shortens the maximum time available for replay. The required memory and the maximum replay time for the entered value are shown below the field. The maximum replay time also depends on the replay recording interval. Required memory also depends on recorded data settings.

If you are not sure, what value to enter, just keep the default of 3600.

Recorded data

Here you can choose, which FS variables should be recorded. The more options you check, the larger the recorded files will become. The single options are described in the chapter [recorded data](#).

Played data

With these options you can select, which of the recorded variables should be used during playback. The single options are described in the chapter [recorded data](#).

Display recording

If this option is checked, *RECORDING* will be displayed in the lower right corner during recording, together with the number of recorded seconds.

Display playback/replay

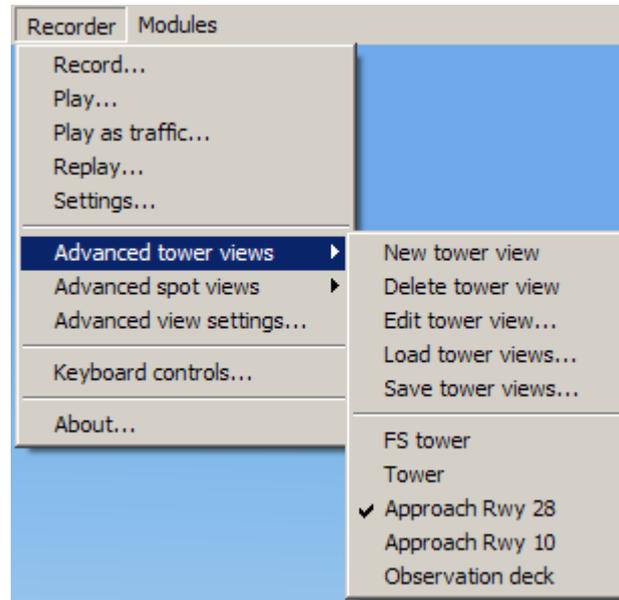
If this option is checked, *PLAYBACK*, *TRAFFIC PLAYBACK* or *REPLAY* will be displayed during playback/replay in the lower right corner, together with the number of seconds played/remaining and loop and speed info.

All settings are saved to the file *Recorder.ini* in the *Modules* folder of your FS2004 directory. It is not recommended to edit this file! If you delete the file, the module will use default settings and create a new file the next time FS is started.

Advanced views

The module includes advanced features for the external (tower and spot plane) views, which give you more freedom for viewing your recorded flights.

Advanced tower views



Creating new tower views

To use the advanced tower view features, you first have to create a new tower view. To do this select *Advanced tower views*>*New tower view* from the *Recorder* menu, or change to tower view and press the key combination assigned to *New tower/spot view* in the [Keyboard controls dialog](#) (default: Ctrl+V). This will create and select a copy of the currently active tower view.

Deleting tower views

To delete the currently active tower view select *Advanced tower views*>*Delete tower view* from the *Recorder* menu, or change to tower view and press the key combination assigned to *Delete tower/spot view* in the [Keyboard controls dialog](#) (default: Shift+Ctrl+V).

Switching between tower views

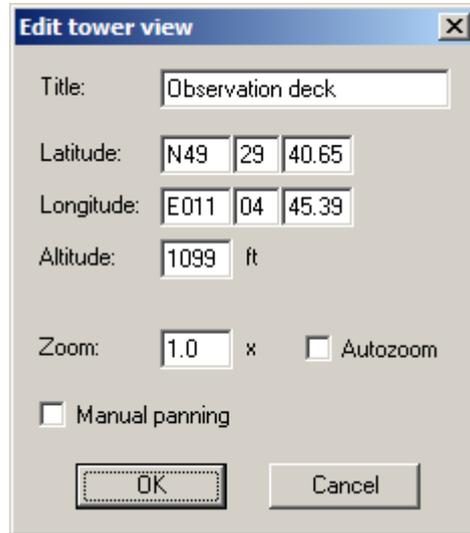
To select a different advanced tower view, select the tower from the list in the *Advanced tower views* submenu. The first entry in the list is always “FS tower”, which selects the default FS tower view.

You can also use the key combinations assigned to *Next tower/spot view* and *Previous tower/spot view* in the [Keyboard controls dialog](#) to cycle through all tower views while you are in tower view mode (default: V and Shift+V).

When changing to a different tower view, it’s title will be shown on top of the window for three seconds.

Editing tower views

To edit the properties of the current tower view, select *Advanced tower views*>*Edit tower view* from the *Recorder* menu to open the following dialog:



Title

The title entered in this field identifies the tower view in the *Advanced tower views* menu and will be displayed for three seconds when switching to this view.

Latitude/Longitude

Here you can change the position of the viewpoint. If you enter something here, make sure to use the correct format. In the first field you have to enter an integer, preceded by an optional 'N' or 'S' for the latitude and 'E' or 'W' for the longitude. Entering any other characters here will evaluate to zero!

Altitude

The altitude of the viewpoint in feet. To set it on the ground you can enter a value of zero.

Zoom

The zoom factor for the view. Valid values range from 0.0625 to 512.

Autozoom

If this option is enabled, the zoom factor will be automatically adjusted with the distance of the aircraft. This will keep the current size of the aircraft on the screen constant, regardless of the aircraft's distance. This feature can also be toggled on/off by the key combination assigned to *Autozoom* in the [Keyboard controls dialog](#) (default: Ctrl+Z). Autozoom is not available in manual panning mode (see below). Using the FS reset zoom control will disable autozoom.

Manual panning

If this option is disabled, the tower view will always be directed to the center of the aircraft, like in the default FS tower view. With manual panning enabled, you can pan around manually, using the standard FS panning controls (including joystick controls). This option can also be toggled on/off using the FS pan reset control.

Loading tower views

To load a set of saved advanced tower views from a file, select *Advanced tower views>Load tower views* from the *Recorder* menu and choose a file in the file selection dialog. **All current tower views will be deleted!**

Saving tower views

To save the current set of advanced tower views to a file, select *Advanced tower views>Save tower views* from the *Recorder* menu and enter a filename in the file selection dialog.

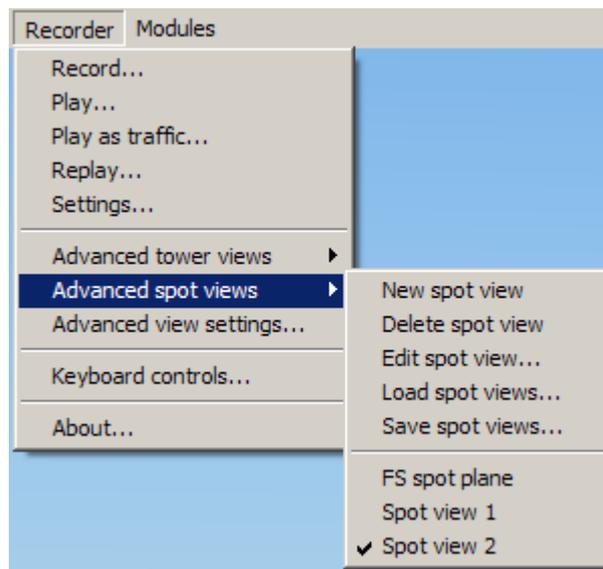
Moving and panning controls

The following FS controls can be used to move the viewpoint and pan the view direction while an advanced tower view is active. They are assigned in the FS controls assignments dialog:

FS control	Function
Move eyepoint up/down/left/right/forward/back	Move view point by step size 1
Look forward/forward right/right/back right/back/back left/left/forward left/up/down	Move view point by step size 2
Look forward up/forward right up/right up/back right up/back up/back left up/left up/forward left up	Move view point by step size 3
Pan up/up right/right/down right/down/down left/left/up left/tilt left/tilt right/pan	Pan view direction (automatically enables manual panning)
Pan reset	Toggle manual panning on/off
Cycle chase view forward/backward	Select aircraft to follow

The three step sizes for moving the view point and the panning speed can be changed in the [Advanced view settings dialog](#).

Advanced spot views



Creating new spot views

To use the advanced spot view features, you first have to create a new spot view. To do this select *Advanced spot views*>*New spot view* from the *Recorder* menu, or change to spot plane view and press the key combination assigned to *New tower/spot view* in the [Keyboard controls dialog](#) (default: Ctrl+V). This will create and select a copy of the currently active spot view.

Deleting spot views

To delete the currently active spot view select *Advanced spot views*>*Delete spot view* from the *Recorder* menu, or change to spot plane view and press the key combination assigned to *Delete tower/spot view* in the [Keyboard controls dialog](#) (default: Shift+Ctrl+V).

Switching between spot views

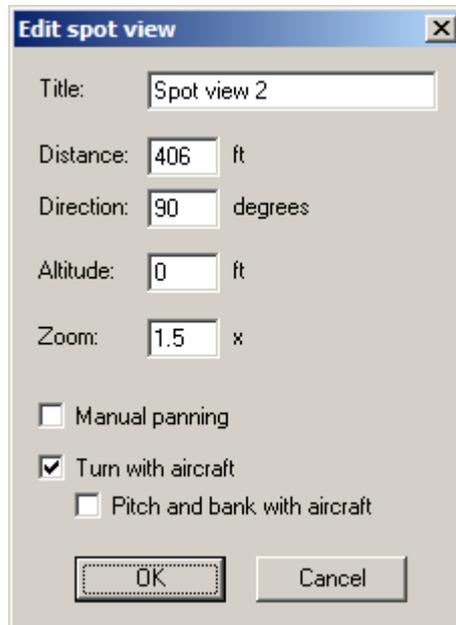
To select a different advanced spot view, select the spot view from the list in the *Advanced spot views* submenu. The first entry in the list is always “FS spot plane”, which selects the default FS spot plane view.

You can also use the key combinations assigned to *Next tower/spot view* and *Previous tower/spot view* in the [Keyboard controls dialog](#) to cycle through all spot views while you are in spot plane view mode (default: V and Shift+V).

When changing to a different spot view, its title will be shown on top of the window for three seconds.

Editing spot views

To edit the properties of the current spot view, select *Advanced spot views>Edit spot view* from the *Recorder* menu to open the following dialog:



Title

The title entered in this field identifies the spot view in the *Advanced spot views* submenu and will be displayed for three seconds when switching to this spot view.

Distance

The distance of the viewpoint to the aircraft in feet in horizontal direction.

Direction

The direction of the viewpoint from the aircraft position in degrees. If *Turn with aircraft* is enabled (see below), the direction is set relative to the aircraft (0=front, 90=right, etc.). If *Turn with aircraft* is disabled, the direction is set as heading.

Altitude

The altitude of the viewpoint above the aircraft in feet.

Zoom

The zoom factor for the view. Valid values range from 0.0625 to 512.

Manual panning

If this option is disabled, the view will always be directed to the center of the aircraft and the panning controls will move the viewpoint around the aircraft, like in the default FS spot plane view. With manual panning enabled, you can pan around manually, using the standard FS panning controls and move the viewpoint using the FS move eyepoint controls. This option can also be toggled using the FS pan reset control.

Turn with aircraft

If this option is enabled, the viewpoint will turn with the aircraft, i.e. if the viewpoint is set left of the aircraft, it will always stay left of it. If the option is disabled, the viewpoint will not turn with the aircraft, i.e. if the viewpoint is set south of the aircraft, it will always stay south of it.

Pitch and bank with aircraft

If this option is enabled, the viewpoint will move with the pitch and bank of the aircraft. This is useful for simulating a camera mounted somewhere on the aircraft. It probably only makes sense with manual panning enabled.

Loading spot views

To load a set of saved advanced spot views from a file, select *Advanced spot views>Load spot views* from the *Recorder* menu and choose a file in the file selection dialog. **All current spot views will be deleted!**

Saving spot views

To save the current set of advanced spot views to a file, select *Advanced spot views>Save spot views* from the *Recorder* menu and enter a filename in the file selection dialog.

Moving and panning controls

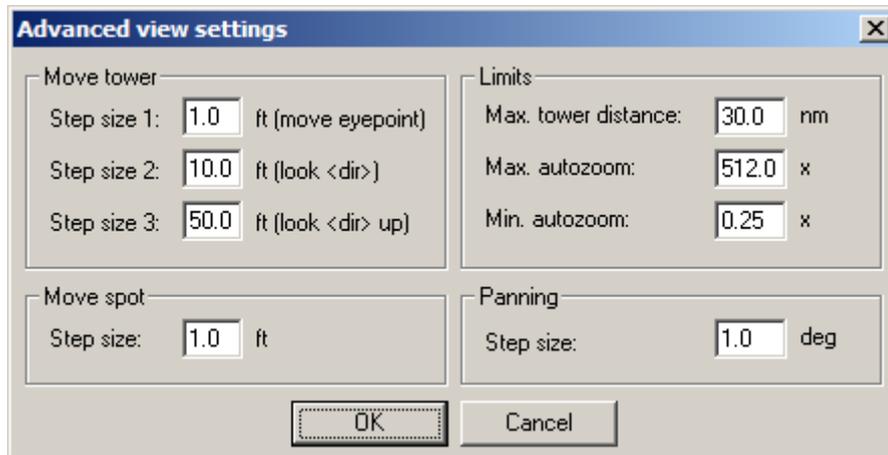
The following FS controls can be used to move the viewpoint and pan the view direction while an advanced spot view is active. They are assigned in the FS controls assignment dialog:

FS control	Function (auto panning)	Function (manual panning)
Move eyepoint up/down/left/right/forward/back	Move viewpoint around aircraft	Move viewpoint
Look forward/forward right/right/back right/back/back left/left/forward left/up/down	Set viewpoint forward/forward right/right/back right/back/back left/left/forward left/up/down of aircraft	
Look forward up/forward right up/right up/back right up/back up/back left up/left up/forward left up	Set viewpoint forward up/forward right up/right up/back right up/back up/back left up/left up/forward left up of aircraft	
Pan up/up right/right/down right/down/down left/left/up left/tilt left/tilt right/pan	Move viewpoint around aircraft	Pan view direction
Pan reset	Toggle manual panning on/off	
Cycle chase view forward/backward	Select aircraft to follow	

The step size for moving the view point and the panning speed can be changed in the [Advanced view settings dialog](#).

Advanced view settings

To open the Advanced view settings dialog select *Advanced view settings* from the *Recorder* menu:



Move tower – Step size 1/2/3

Here you can set the step sizes for moving the viewpoint in the advanced tower views in feet. Step size 1 is assigned to the FS move eyepoint controls, step size 2 to the look <direction> controls, step size 3 to the look <direction> up controls (see [Moving and panning controls](#) in the advanced towers chapter).

Limits – Max. tower distance

Sets the maximum distance of the viewpoint to the aircraft for the advanced tower views in nautical miles. If the distance of the aircraft from the tower position exceeds this value, the viewpoint will follow the aircraft.

Limits – Max./Min. autozoom

Sets the maximum and minimum zoom factors used in the autozoom mode.

Move spot – Step size

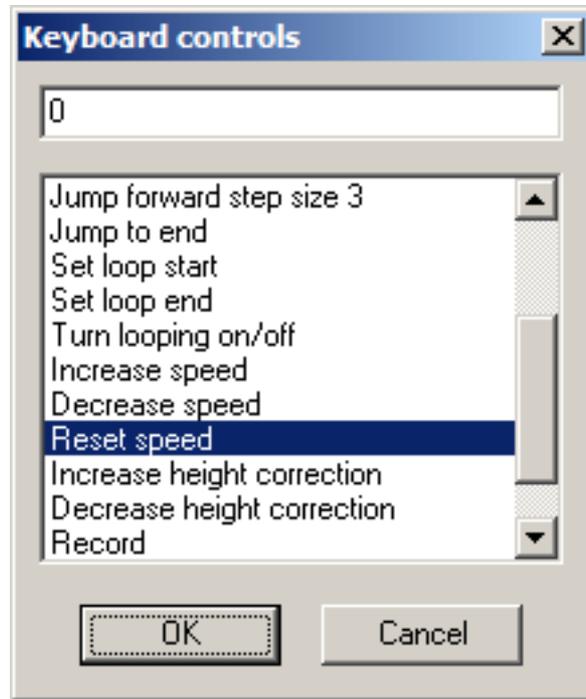
Here you can set the step size for moving the viewpoint in the advanced spot views in feet.

Panning – Step size

Here you can set the step size for panning the view direction in the advanced views in degrees.

Custom keyboard controls

To customize the keyboard shortcuts to control the module, select *Keyboard controls* from the *Recorder* menu. The following dialog will appear:



If you select a command from the list, the currently assigned key combination will be shown in the hotkey field above. To change it, just press the key combination you want to assign (the focus has to be on the hotkey field!)

Recorded data

The following data is always recorded, and set during playback, by the module:

- aircraft latitude, longitude and altitude
- aircraft pitch, bank and heading
- aircraft X, Y, and Z velocities
- aircraft on ground flag
- parking brake

In the [settings dialog](#) you can define, which of the following data should be recorded and set during playback:

- Throttles: throttles 1 to 4
- Elev/Ailr/Rud: elevators, ailerons, rudder
- Gear: gear handle
- Flaps: flap handle
- Spoilers: spoilers/speedbrake handle
- Lights: all default aircraft lights
- Engines: engines 1 to 4 on/off
- Prop/Mixture: propellers and mixtures 1 to 4
- Nav radios: VOR 1 and 2 frequency and course, ADF frequency
- Com radios: COM 1 and 2 frequencies, transponder code
- Date/time: zulu date and time
- Smoke: smoke on/off

Known problems

- **The playback control window can cause a drop in frame rate, at least when running FS in fullscreen mode. Try to disable the playback control window, if you experience bad frame rates during playback.**
- **For certain addon aircraft using custom programmed systems, recording/playback of certain variables may not work correctly.**
- **Enabling playback of date and time can cause problems on some system configurations due to the frequent modification of the clock. Try to disable this option if you experience problems during playback.**
- **When using the playback search/jump controls or increasing playback speed while in “Play as traffic” mode, the aircraft can get overstressed, which will result in FS deleting the aircraft.**
- **Two users reported, that FS crashes when starting playback with certain aircraft. A workaround for this problem is to switch to outside (tower or spot plane) view before starting playback; when playback is running you can switch back to cockpit view.**

History

Version 1.2

- added "play as traffic" feature
- added advanced tower and spot views
- added optional adjustment of sim rate with playback speed
- increasing sim rate during recording will no longer result in too fast playback
- display recording/playback in lower right corner (instead of green bar on top)

Version 1.05

- added search mode
- all lights of the LevelD 767 are now recorded and played
- changed method for setting flaps during playback to work with the PMDG 747
- some changes which might reduce stutters during playback

Version 1.01

- during playback/replay the gradual transition of the spot plane view is automatically disabled to avoid stuttering

Version 1.0

- added warning when enabling date/time playback in settings dialog
- increased maximum buffer size
- added some notes to this manual and a txt version of the manual

Version 0.8 beta

- made recorded data customizable
- added recording of prop/mixture, nav and com radios, date/time and smoke
- added option to turn off AI traffic during playback
- added options to display recording/playback/replay
- added customizable keyboard controls
- added feature to automatically stop recording
- added height correction for playback with different aircraft
- fixed fullscreen dialog problem

Version 0.72 beta

- solved exterior and VC light problems reported by some users
- added option to clear replay data on flight or aircraft change
- added pause at end option
- added 1/8 sec recording interval
- added feature to stop playback at current position (without jumping to the end)

Version 0.7 beta

First public beta release

Support

If you need support, found a bug, have suggestions for improvements, or any other comments on the module, visit the support forums at <http://www.neusinger.net/recorder>.

To contact the author directly, send an email to recorder@neusinger.net.

Please report all bugs you find, so I can fix them.

Before contacting me for support in case of problems, first read this manual, especially the [known problems](#) section! Also check if you have the newest version, which can be found in the downloads section of <http://www.neusinger.net/recorder>.

Donations

If you want to support the development of the module, you can make a donation via PayPal directly using [this link](#), or go to the PayPal website and use recorder.donations@neusinger.net as recipient's email.

I hope you enjoy my module.

Matthias Neusinger