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# [1.4.0-1.8.1] NavUtilities continued, ft. HSI & Instrument Landing System [v0.7.2] (2018 Apr, 1)

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By Ser, July 6, 2017 in [Add-on Releases](#)[navigation](#)[hsi](#)

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Page 1 of 5

**Ser**

Sr. Spacecraft Engineer



Members

[+ 614](#)

998 posts

Posted July 6, 2017 (edited)

[Report post](#)This is a continuation of NavUtilities mod by [@kujuman](#).

Original thread:

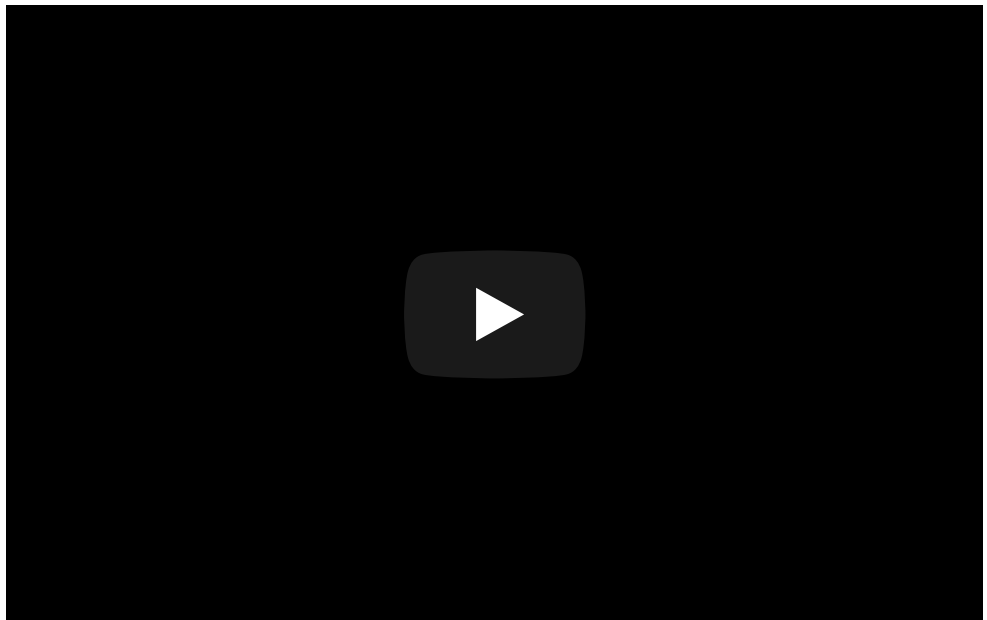
<http://forum.kerbalspaceprogram.com/index.php?/topic/77062-11-navutilities-ft-hsi-instrument-landing-system/>

To keep as much of the author's information on the mod as possible I copy most of the original thread's OP here with some updates:

NavUtilities for KSP

Featuring Instrument Landing System and Horizontal Situation Indicator

Standalone and for Raster Prop Monitor



NOTE: Standalone version is a popup window, but the information displayed is the same

Adds a horizontal situation indicator with integrated ILS functionality to a popup window or your RPM cockpit.

The standalone version can be accessed (along with the options page and custom runway page, for controlling the current runway and GUI scale) via the App Launcher.

ILS style localizer, glideslope indicator, distance measuring equipment, and backcourse indicator.

Outer, Middle, and Inner Markers are fully functional, with the audio cue volume controlled by your Voices volume setting (**WARNING:** Middle and Inner marker audio cues are high pitch and, depending on your settings, may be loud). Currently, volume settings will not update when in flight, but going to the space center should update them.

The window GUI auto hides when you enter IVA. Current runway and glideslope selection remain synced between the standalone GUI and the version for RPM.

Included selectable runways:

KSC 09

KSC 27

Island 09


VAB Helipad East

VAB Helipad West

Administration Helipad

Included glideslopes range from default 3° to 25°

More runways and glideslopes can be added via config file  
or in game.

Helpful images of 0.4.0+ features 

[Javascript is disabled. View full album](#)

Please note that if you are using KSI MFD, you can *also*  
select the HSI by cycling between this and the landing  
screen. [Thanks to Tahvohck!](#)

## DOWNLOAD from SpaceDock

*HINT by @Ser: Did you know that you can open the  
settings window holding Alt when pressing the toolbar  
button?*

Copy the contents of GameData folder into your main  
KSP/GameData/ folder. The other files are not required for  
the plugin to function.

To enable some third party MFD support or to be able to  
modify runway data in a convenient way you'll need

[Module Manager](#) by sarbian

For RPM integration you'll additionally need

[RasterPropMonitor](#) by Mihara and MOARdV

However, NavUtilities doesn't depend on these mods for  
running in standalone.

Software License: © 2014-2016. All rights reserved.

Permission is granted to any current, former, or future members of the KSP community (e.g.; non-professional modification makers and forum members) to update, maintain, use portions of the code, and/or release derivatives provided that 1) the new work is solely to be used as a modification for Kerbal Space Program (and future versions thereof) and 2) the new work is freely distributed and may not be sold or exchanged.

Artwork License: Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

Edited November 18, 2019 by Ser

Tested KSP 1.8.1 compatibility



Quote

linuxgurugamer, ss8913, Ourshinigami and 10 others like this



My mods:



[Hangar Grid](#) - simplifies vessel design by adding a grid and an automatic alignment tool

[G-Effects](#) - blackouts, redouts, G-LOCs: another step to make KSP a flight simulator

[Fog Of Tech](#) - hides the technologies in the tech tree that

...

## Beetlecat

Sr. Spacecraft Engineer



Members

+ 682

1,804 posts

Posted July 6, 2017

Report post

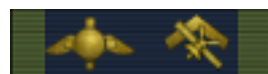
Splendid! Thank you for taking this on.



Quote



Onward!

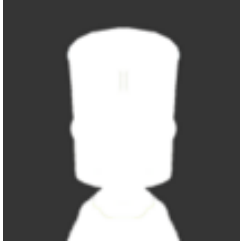


## Ser

Posted July 6, 2017 (edited)

Report post

● ● ● ●



**+ 614**

*Changes made to the original version:*

- KSP 1.3.0 compatible
- Added a setting to hide NavBall waypoint icon
- Brought back Blizzy's toolbar support
- Runways made loadable as regular KSP configs and thus modifiable by Module Manager
- Only the runways belonging to the current celestial body are selectable
- Fixed INS waypoint names displayed
- Simplified folder structure for the mod not being that dependent on it

+

Nightside likes this



Fog Of Tech - hides the technologies in the tech tree that

Who are we ? What is the purpose of life? hooo a ball !!



**+ 40**

Posted July 6, 2017

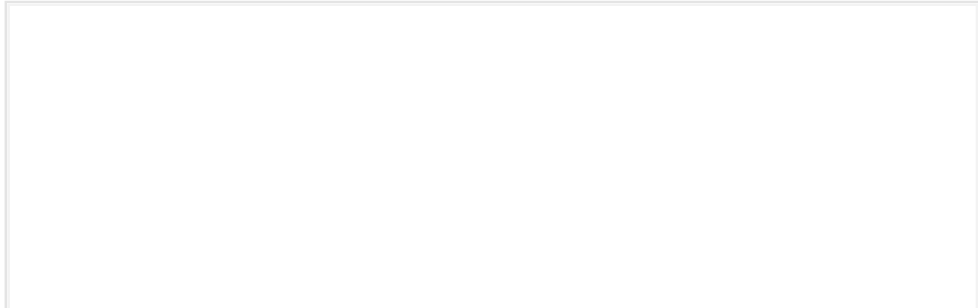
|||||

|||||

+

## Quote





## Beetlecat

Sr. Spacecraft Engineer



Members

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Report post

Custom runway page? -- is there a selectable list of runways now?

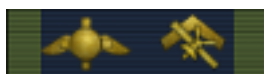
<loads up KerbinSide runways into NavUtilities again...>



Quote



Onward!



## Ser

Sr. Spacecraft Engineer



Members

+ 614

998 posts

Posted July 6, 2017 (edited)

Report post



On 7/6/2017 at 6:13 PM, Beetlecat said:



Custom runway page? -- is there a selectable list of runways now?

<loads up KerbinSide runways into NavUtilities again...>

No, that page is mainly for creating runways for navigation and it has been there for a long time. You place a vessel where the runway starts, turn in the heading of the runway, check the "auto" boxes, press "Create" and voila, the runway is saved in Runways/customRunways.cfg file. Also you can copy your runways from that file and create MM patches from them, so you won't need to save/paste them every time the mod updates.

Actually it's a good question, is there a way to automatically detect existing runways in the game. I don't

know the answer yet.

Edited July 6, 2017 by Ser



Quote

Beetlecat likes this



*My mods:*



[Hangar Grid](#) - simplifies vessel design by adding a grid and an automatic alignment tool

[G-Effects](#) - blackouts, redouts, G-LOCs: another step to make KSP a flight simulator

[Fog Of Tech](#) - hides the technologies in the tech tree that

## Beetlecat

Sr. Spacecraft Engineer



Members

+ 682

1,804 posts

Posted July 6, 2017 (edited)

Report post

Ah. I see the difference.

The means of selecting manually patched-in or added runways would be awesome. Paging through more than a handful with < and > is not very friendly. 🙄

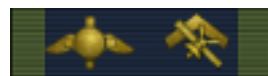
Edited July 6, 2017 by Beetlecat



Quote

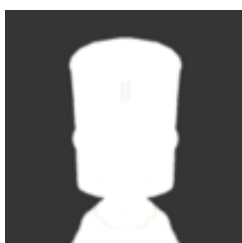


Onward!



## Ser

Sr. Spacecraft Engineer



Members

+ 614

998 posts

Posted July 7, 2017 (edited)

Report post

[@Beetlecat](#) Oops, just checked the Custom runway page doesn't work as intended. I must have broken it while struggling with other things. Expect a patch in 12 hours I think.

EDIT:



On 7/6/2017 at 7:09 PM, Beetlecat said:



Ah. I see the difference.

The means of selecting manually patched-in or added runways would be awesome. Paging through more than a handful with < and > is not very friendly. 🙄

Can do what you ask for but that'll take a little more time to release.

Edited July 7, 2017 by Ser



Quote



*My mods:*



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[G-Effects](#) - blackouts, redouts, G-LOCs: another step to make KSP a flight simulator

[Fog Of Tech](#) - hides the technologies in the tech tree that

## Isabelle.V.Fuchs

Rocketeer



Members

+ 10

77 posts

Location: Ahrensburg,  
Germany

Posted July 7, 2017

Report post



Yay!!!

One of my most loved mods lives again.

Thank you!



Quote



Isabelle



## theonegalen

Senior IVA Designer



Posted July 8, 2017 (edited)

Report post



Fantastic! Is the AnalogHSI prop still included with this version?

EDIT: Also, how do I use modulemanager to add the KerbinSide runways?





Members  
+ 896  
1,514 posts  
Location: Houston area

Edited July 8, 2017 by theonegalen

+ Quote



Musician, Teacher, Science Enthusiast, Nerd, Christian

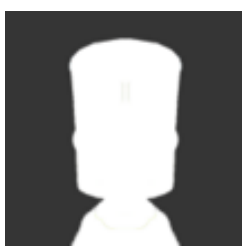
Working on custom ASET IVAs for stock and mod cockpits:

[Warbird Cockpits!](#)

Current WIP: Stock Mk1Inline (F-15A), Mk2Inline (Blackbird/Retro), and Mk1Pod (Mercury) cockpit,

**Ser**

Sr. Spacecraft Engineer



Members  
+ 614  
998 posts

Posted July 8, 2017 (edited)

Report post



## Version 0.7.1 is out

Changelog:

\* Added a runway selection window accessible by [Alt]-click on the "RUNWAY" word on standalone HSI or via settings window.

It is useful if you have lots of runways which are hard to select by forward/backward clicking.

\* Fixed customRunways file overwritten when adding a new runway

[Download from Spacedock](#)

Edited July 8, 2017 by Ser

+ Quote



*My mods:*

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[Fog Of Tech](#) - hides the technologies in the tech tree that

**Ser**

Sr. Spacecraft Engineer

Posted July 8, 2017 (edited)

Report post





Members

+ 614

998 posts

On 7/8/2017 at 2:42 AM, theonegalen said:

Fantastic! Is the AnalogHSI prop still included with this version?

I didn't touch it, so it is still included in the mod but there's a probability that some refactoring could make it malfunction. So if you find any bugs with it please report them.

On 7/8/2017 at 2:42 AM, theonegalen said:

Also, how do I use modulemanager to add the KerbinSide runways?

I don't know the way KerbinSide stores its runway data. Looks like [@Beetlecat](#) is doing just that.

As for some custom runways that haven't any data at all, there is a Settings window opened with [Alt]-click on the Toolbar button. From there you can go to the custom runway editor. Place a vessel on the runway's end, match its heading with the runway, check all the "Auto" boxes, press "create" and the runway will be created and saved in the Runways/customRunways.cfg. Then you can copy and paste all of your runways from there into another .cfg file, placed anywhere in the gamedata. So they will be automatically loaded everytime KSP starts. I guess you don't even need Module Manager for that.

Module Manager is needed if you alter some runway. For example, I don't like to be guided to the Abandoned KSC so I've created a patch:

```
!NavUtilRunway[ * ]:HAS[ #shortID[ KSC2 ] ]  
{  
}
```

Edited July 8, 2017 by Ser



Quote

Beetlecat and theonegalen like this



*My mods:*



[Hangar Grid](#) - simplifies vessel design by adding a grid and an automatic alignment tool

[G-Effects](#) - blackouts, redouts, G-LOCs: another step to make KSP a flight simulator

[Fog Of Tech](#) - hides the technologies in the tech tree that

## theonegalen

Senior IVA Designer



Members

+ 896

1,514 posts

Location: Houston area

Posted July 9, 2017

Report post



On 7/8/2017 at 9:22 AM, Ser said:



I didn't touch it, so it is still included in the mod but there's a probability that some refactoring could make it malfunction. So if you find any bugs with it please report them.

Excellent. I will do so.



On 7/8/2017 at 9:22 AM, Ser said:



So they will be automatically loaded everytime KSP starts. I guess you don't even need Module Manager for that.

Module Manager is needed if you alter some runway. For example, I don't like to be guided to the Abandoned KSC so I've created a patch:

```
!NavUtilRunway[ * ]:HAS[#shortID[KSC2
]]
{
}
```

Oh, fantastic! That means I can do a patch that detects if I'm using a mod that moves the KSC to a higher latitude and automatically change it's location! Brilliant!



Quote



Musician, Teacher, Science Enthusiast, Nerd, Christian

Working on custom ASET IVAs for stock and mod cockpits:

[Warbird Cockpits!](#)

Current WIP: Stock Mk1Inline (F-15A), Mk2Inline (Blackbird/Retro), and Mk1Pod (Mercury) cockpit,

## Beetlecat

Sr. Spacecraft Engineer



Members

+ 682

1,804 posts

Posted July 9, 2017

Report post



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Module Manager is needed if you alter some runway. For example, I don't like to be guided to the Abandoned [KSC](#) so I've created a patch:

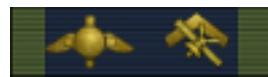
```
!NavUtilRunway[*]:HAS[#shortID[KSC2  
]]  
{  
}
```

Kerbinside \*does/did\* have its own, embedded nav system, but there was also a custom set of coordinates created for NavUtils based on all the runways and helipads (in one of those deeply embedded comments or thread replies... The old method was to override the entire list, but with the new MM technique, they could be dynamically added. My computer is in pieces at the moment, but once I get back in, I could re-post the file/contents as a possible add-on.

+ Quote



Onward!



## Eugene Moreau

Rocketry Enthusiast



Members

+ 15

92 posts

Location: CYWG

Posted July 14, 2017

Report post



I have a couple questions/feature requests. display what my vertical speed should be to maintain glide slope. I know a lot of people don't like autopilots, but is there any way to either have it maintain glide slope for you or integrate with another mod to do so?

+ Quote



## Beetlecat

Sr. Spacecraft Engineer



Members

Posted July 14, 2017

Report post



On 7/14/2017 at 1:21 PM, Eugene Moreau said:



I have a couple questions/feature requests. display what my vertical speed should be to maintain glide slope. I know a lot of people don't like autopilots, but is there any way to either have it maintain glide slope for you or integrate with another mod to do so?

+ 682

1,804 posts

It depends on the actual slope -- entirely! 🤖

Most people fly in far steeper than a usual slope would be.  
3 degrees?

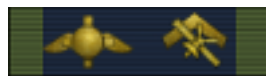
This could be  
interesting: [http://www.flightsimaviation.com/rule-of-thumb/10\\_Three\\_Degree\\_Glideslope.html](http://www.flightsimaviation.com/rule-of-thumb/10_Three_Degree_Glideslope.html)



Quote



Onward!



## Eugene Moreau

Rocketry Enthusiast



Members

+ 15

92 posts

Location: CYWG

Posted July 14, 2017

Report post



I know 3 degrees, but depending on air speed (time to threshold), altitude, you're gonna have to have a specific vertical speed. I know I could probably figure it out with pen and paper, but I can't do it on the fly while I'm trying to land. I'll have to look at the rules of thumb, but was hoping for something more accurate to get me right onto the runway. My actual flying skills are pretty bad.



Quote



## Rodhern

Rocketeer



Members

+ 71

320 posts

Posted July 15, 2017

Report post



On 7/14/2017 at 8:50 PM, Eugene Moreau said:



... My actual flying skills are pretty bad.

You sir, are a true Kerbal. 🤖



Quote



Sr. Spacecraft Engineer



Members

+ 614

998 posts

On 7/14/2017 at 8:50 PM, Eugene Moreau said:

I know 3 degrees, but depending on air speed (time to threshold), altitude, you're gonna have to have a specific vertical speed. I know I could probably figure it out with pen and paper, but I can't do it on the fly while I'm trying to land. I'll have to look at the rules of thumb, but was hoping for something more accurate to get me right onto the runway. My actual flying skills are pretty bad.

In IRL those speeds are provided in the landing chart like here:

[https://www.dropbox.com/s/5kdqq8xfug7u27g/Kerbin\\_AEROCHARTS-09-feb-2017.pdf?dl=0](https://www.dropbox.com/s/5kdqq8xfug7u27g/Kerbin_AEROCHARTS-09-feb-2017.pdf?dl=0) (see the page 4-2, 4-3, lower right corner). Actually it's not that hard to keep on the glideslope even not knowing what your vertical speed should be. Here are some hints:

1. It's hard to control both ground and vertical speeds at the same time, that's why you want the reading that would show you the VS whatever your ground speed is. The trick is to "fix" the ground speed. Keep it just above the speed you start stalling, when your aircraft is still controllable. Try to keep the +/- exact value all the time.
2. "Inverse" your habits from high speed flying: use throttle to increase/decrease vertical speed and pitch to control your ground speed. It is more difficult with stock engines because the time the thrust reacts on throttle but it's easier with AJE with more realistic engine responses. When you need to adjust VS, the throttle should go first, then make fine corrections to the ground speed with pitch. Then a little bit throttle again, then a little bit pitch.
3. Approach at the proper altitude: see the landing chart 4-3 on the above link: you should be on 600 m altitude when passing DME 10 km. And already be close to your landing speed. You may start your descent a little bit earlier to keep up with moving GS indicator.
4. Increase your vertical speed gradually until the GS



indicator stops moving. Look at the current VS value and remember it. Then increase your VS a little bit more - the GS indicator will move up to the "center".

Once it gets close, set the VS you've remembered.

5. If you go below the GS, don't chase the VS needle by going up. Just set a minimal (or zero) vertical speed and you'll intercept the slope sooner or later. Then repeat 4.
6. The closer you get, the more sensitive the indication gets, so after the middle marker you don't have to keep it exactly centered.
7. Once you cross the end of the runway (the inner marker sound helps you to hear it) forget the GS and look only at vertical speed to have a safe value on touchdown (assuming you've followed the GS properly).

Of course, it would be much easier to follow flight director by just keeping your nose in the FD cross but that's not for the evil hardcore pilots 🙄 (Doesn't ASET HUD have this?)

Edited July 16, 2017 by Ser



Quote

GenjoKoan and Nansuchao like this



My mods:



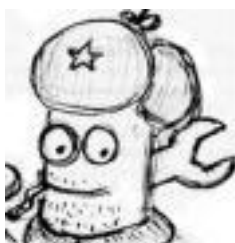
[Hangar Grid](#) - simplifies vessel design by adding a grid and an automatic alignment tool

[G-Effects](#) - blackouts, redouts, G-LOCs: another step to make KSP a flight simulator

[Fog Of Tech](#) - hides the technologies in the tech tree that

## Shnyrik

Bottle Rocketeer



Members

+ 130

141 posts

Posted July 16, 2017 (edited)

Report post

Some time ago I posted configs for runways from KerbinSide mod. Here is the updated version.

For those who also use KerbinCity mod I added a beacon directing approximately at KerbinCity TV tower.

➤ **Reveal hidden contents**



Edited July 18, 2017 by Shnyrik



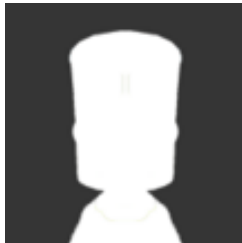
Quote

Drew Kerman likes this



**Ser**

Sr. Spacecraft Engineer



Members

+ 614

998 posts

Posted July 17, 2017 (edited)

Report post



On 7/16/2017 at 1:26 PM, Shnyrik said:



Some time ago I posted configs for runways from KerbinSide mod. Here is the updated version.

For those who also use KerbinCity mod I added a beacon directing approximately at KerbinCity TV tower.

If you keep your runway configs as a separate .cfg, I'd recommend to remove those *custom = True* lines. In current implementation they make your runways editable with custom runways editor and saved to customRunways.cfg file whenever *Create runway* button is pressed.

Edited July 17, 2017 by Ser



Quote



My mods:



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**Shnyrik**

Bottle Rocketeer



Posted July 17, 2017

Report post



On 7/17/2017 at 4:20 AM, Ser said:



If you keep your runway configs as a separate .cfg, I'd recommend to remove those *custom = True*



Members

+ 130

141 posts

Somehow, when I remove this line, I stop getting those runways in the list for selection.

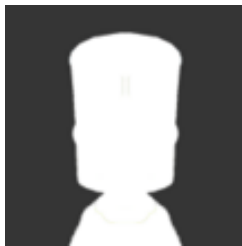


Quote



**Ser**

Sr. Spacecraft Engineer



Members

+ 614

998 posts

Posted July 17, 2017

Report post 



On 7/17/2017 at 4:41 AM, Shnyrik said:



Somehow, when I remove this line, I stop getting those runways in the list for selection.

Do you mean the new runway selection window or the list in runway editor window?



Quote



*My mods:*



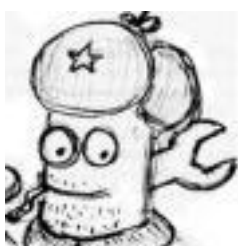
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Members

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141 posts

Posted July 17, 2017 (edited)

Report post 

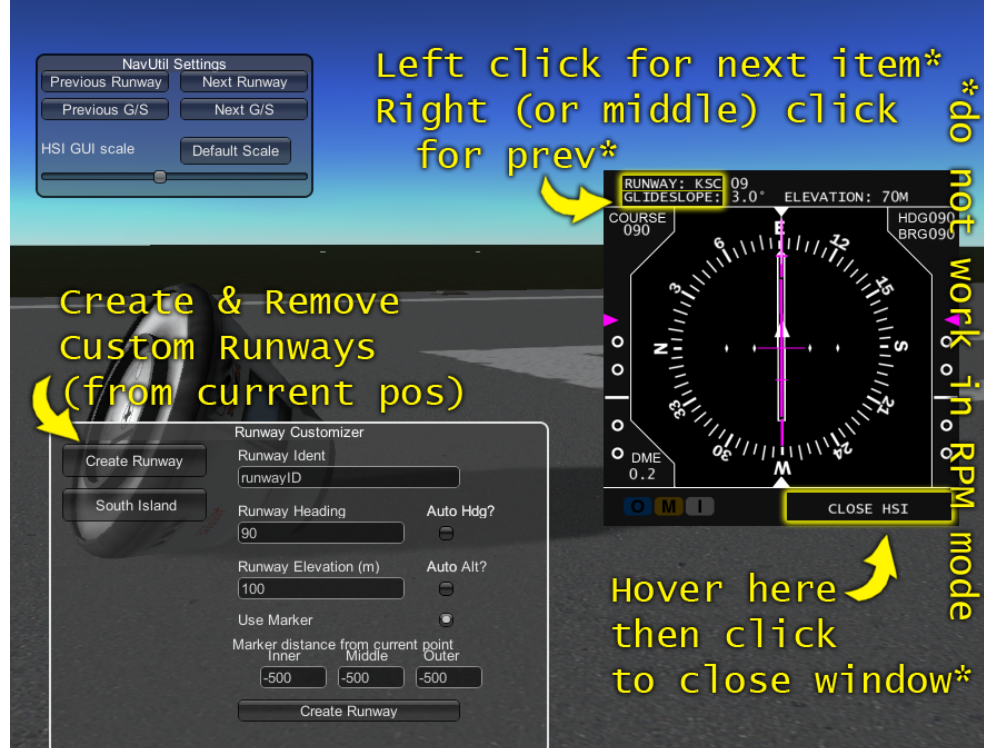


On 7/17/2017 at 5:56 AM, Ser said:



Do you mean the new runway selection window or the list in runway editor window?

I mean the list in the main window (in the yellow square on the image) where you click on the "runway" label to cycle.



Or "Next" and "Previous" buttons on the MFD.

It's strange, but without the "*custom = True*" strings those buttons cycle only through the "prebuilt" list of runways, but when I add the string to my configs, I get them in the list.

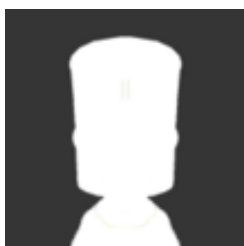
Edited July 17, 2017 by Shnyrik

+ Quote



**Ser**

Sr. Spacecraft Engineer



Members

+ 614

998 posts

Posted July 18, 2017

Report post



On 7/17/2017 at 6:15 AM, Shnyrik said:

I mean the list in the main window (in the yellow square on the image) where you click on the "runway" label to cycle.

Or "Next" and "Previous" buttons on the MFD.

It's strange, but without the "*custom = True*" strings those buttons cycle only through the "prebuilt" list of runways, but when I add the string to my configs, I get them in the list.

Couldn't reproduce that. I've created a custom runway, moved it into a separate .cfg file and removed custom = True line and it still appears everywhere it should. So I need

exact steps to reproduce your issue.

Another bug I've found is if you have a removed runway by an [MM](#) patch and create a new custom one, it gets saved to customRunways.cfg without the removed one so that runway just gets deleted permanently. Well, the runway save system still isn't perfect.

 [Quote](#)



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