

## Thrustmaster Warthog IL2 BOS Layouts and TARGET Script Files 4.603

By Nick "Darkdiz" Lisney

For use with the Thrustmaster Warthog Joystick (F16)/Throttle, Thrustmaster Pendular Rudder System, Track IR5 with Track Clip Pro, Simplified Radio System (SRS), Teamspeak 3. Note that this file uses a modified aftermarket SC Axis switch available from Deltasim Electronics.

Deltasim Throttle SC Switch Mod (<https://deltasimelectronics.com/>)  
I invested in the aftermarket replacement switch from Delta Sim Electronics (<https://deltasimelectronics.com/products/thumbstick-slew-sensor-adapter>) for the SC switch. It works MUCH better than the out-of-the-box Blackberry-style button on stock throttles, and gives you vastly better control. This allows you to use this switch as another hat.

First things first: A huge thanks for some outstanding work by Arfsix for the original keybindings file (<https://forum.il2sturmovik.com/topic/27994-key-command-list-updated-and-current>) (I modified it slightly and added stuff for the latest IL2-BOS v4.503), and some equally fabulous work by Hipsu, who made a really cool spreadsheet for each aircraft and their individual controls (<https://forum.il2sturmovik.com/topic/60546-plane-specific-controls-filterable-spreadsheet/?tab=comments#comment-971145>) which points you to ([https://docs.google.com/spreadsheets/d/1WZFFW18zSU0ip5QIZQbmuChM5Tw\\_5u-sqDCEKO5kWk0/edit#gid=573482709](https://docs.google.com/spreadsheets/d/1WZFFW18zSU0ip5QIZQbmuChM5Tw_5u-sqDCEKO5kWk0/edit#gid=573482709)). My version included on a tab in the Darkdiz BOS Keymaps spreadsheet is essentially a reformatted copy of Hipsu's, but I added a few columns for AC that were not listed or are coming, but not yet here (currently those aircraft columns are hidden). Clearly, this would have taken a whole lot longer to complete without these awesome resources. Other resources used are credited in the appropriate section below.

The files included in the distribution .zip file are as follows:

### PDFs:

- IL2 – BOS – Darkdiz Read Me First (this file)
- IL2 – BOS – Darkdiz Warthog Layouts
- IL2 – BOS – Plane Specs
- IL2 – BOS – Engine Specs

### XLSSs:

- IL2 – BOS – Darkdiz Keymaps etc
- IL2 – BOS – Gunsights

### FCFs:

- IL2 – BOS ModWarthog – Planes Profile

## IL2 – BOS ModWarthog – Tanks Profile

Folder:

/Snapviews

Other:

Darkdiz\_current.map

IL2 BOS – Darkdiz Thrustmaster Macros.ttm

IL2 BOS – Default Thrustmaster Macros.ttm

These files were created as a result of there not being a whole lot of fully documented Thrustmaster scripts for IL2-BOS. Given the varied aircraft modeled in this sim, and the fact that most of them are fairly unique with respect to controls, I decided to spend some time creating some script files (.fcf) for use with the system I have, and at least document them sufficiently so that most people can very quickly load it onto their system. Hit me up on the forums if you want something for your specific system, not promising anything here, but I'll do my best.

The scripts in here work for me, and I'm not guaranteeing that they will work for everyone. A good deal of thought has gone into these keymaps, and I tried to group them in a logical fashion (my previous experience as a Test & Evaluation officer in the RCAF certainly helped here). I tried to map any function that relates to flight controls singularly (ie no other function on the button, same as for view keys). Like-functioning keys are bound on the same button, and wherever possible, functions that could be mis-pressed (some hat functions) are setup in such a way as to avoid disaster on a mis-press, like dropping a bomb when you wanted to hit the airbrakes etc., or ejecting accidentally... I am also spending quite a lot of effort tweaking and updating the files when I feel it is necessary (for example when a specific function or keymap could be done better or is more efficient in another place).

This system works by combining similar aircraft functions into a common script, then documenting the actual functions (what aircraft has what) onto pdf files, so there is an easy reference for each aircraft and aircraft group in flight. Even though a particular function may be *mapped* onto a particular button, a particular aircraft may not have that function available, so when that button is activated, nothing appears to happen. For example, if I'm flying a Spitfire, and invoke RSHF n (Bomb Bay Doors), nothing will happen, since Spits are not equipped with Bomb Bay Doors. However, if I invoke RCTL I (nav lights), they will light up on the wings as one would expect. Any aircraft that has nav lights will obviously behave the same way if that function is invoked. For this system, using the example above, nav lights are mapped the same for each aircraft, so it doesn't matter which aircraft you are in, if it has nav lights, pull the pinky button back, they will light up.

The pdf file is critical to avoid confusion. Since there are MANY different, unique aircraft, functions can be very different between aircraft. However, there are some similarities. Taking advantage of these similarities, I have managed to group similar aircraft as pages in a pdf file, complete with each aircraft's specific functions. As you can see, there may be several pdf pages that cover the single aircraft-related fcf (we are only going to consider the Plane Profile fcf, tanks are different and will be discussed separately). It was impossible to get ALL aircraft along with their specific functions onto a single pdf page, so I split up the aircraft into the pdf pages contained in the file.

Before we begin, note that for some reason, occasionally the game will see an un-modified keypress when a modified keypress is activated, especially when you are doing multiple functions concurrently. For example, in the game's default keymaps, the b key drops bombs. However, if you activate the LSHF b key (engine boost), a bomb MAY still be released, even though you just wanted to go faster. On most occasions I remapped unmodified key maps to include a modifier (L/R Shift, L/R Control, L/R Alt). I tried to stay away as much as possible from the L/R WIN keys, as they sometimes invoke hidden Windows functions. In the instances where I used these keys, I ensured they did not do this. I also stayed away from known Windows functions, such as ALT-TAB, CTL-ALT-Del etc.

One thing on the actual hardware and software... The Thrustmaster T.A.R.G.E.T. application combines all the Thrustmaster components you have installed installed to a virtual combined joystick system. In Windows, this shows up as Thrustmaster Combined, and although the separate Thrustmaster Joystick, Thrustmaster Throttle and Thrustmaster Rudder entries may still appear in the Windows Joystick Control Panel, they are non-functional when a TARGET script is running, and will return a driver error if you check devices under Windows. This is normal. In my experience, sometimes they appear, sometimes they don't. Non-Thrustmaster components will still be visible and responsive as normal, they are not affected by TARGET. If you had previously mapped all your joystick functions without using TARGET, each component would have been assigned a number, such as Joy0, Joy1 etc. If you have other joystick-type peripherals attached, they may also show up as Joy(insert number here). I recommend, for simplicity, having only those joystick peripherals attached that you are going to use. On my system, I occasionally use CH Pro pedals, which show up as Joy1, with the Thrustmaster Combined showing up as Joy0. All the functions assigned to the CH Pro pedals had to be done through the key mapping page in the game, so for example the left wheel brake shows up as Joy1 X-axis once I successfully mapped it in-game. When using the Thrustmaster rudder system, it is included in Joy0, and so must be assigned in-game to the appropriate axis.

Specifically, with all Thrustmaster components (joystick, throttle and rudders all controlled by TARGET) the following should appear when you map them IN-GAME:

Joy0\_X\_Axis = Joystick Up/Down mapped to Pitch  
Joy0\_Y\_Axis = Joystick Left/Right mapped to Roll  
Joy0\_Z\_Axis = Rudder Left/Right mapped to Yaw  
Joy0\_P\_Axis = Right Throttle Lever mapped to Engine Power  
Joy0\_Q\_Axis = Throttle Friction Control (TFC) mapped to Mixture  
Joy0\_S\_Axis = Rudder Left Brake mapped to Left Toe Brake  
Joy0\_T\_Axis = Left Throttle Lever mapped to Engine RPM  
Joy0\_W\_Axis = Rudder Right Brake mapped to Right Toe Brake

If you have other peripherals, they will show up as Joy(insert number here), and control whatever axis you set them up to control.

Another thing to note is that I use Teamspeak 3 (TS) for most of my comms, which if setup correctly can complement the use of the Simplified Radio System (SRS) found on most public multiplayer servers. After MUCH testing, I discovered that having separate PTT switches for each system is the way to go and stick to the keyboard for changing channels and radios. I use a Logitech G13 Gameboard for my comms panel, it works well in this role, but the keyboard will work just as well (if setup correctly). I have integrated several TS and SRS functions into the script, if you don't use these apps, then you can ignore them.

I also use Track IR 5, this is a game-changer. Highly recommended. I have the TIR center function mapped to LCTL+LSHF F12, TIR pause to LCTL+LSHF F9, and TIR precision mode to LCTL+LSHF F7. You need to also map your TIR controls to this for the script to properly re-center your TIR when commanded.

First off, let's figure out how to get started. I'm going to assume that you know how to start TARGET, and load a script file using the TARGET GUI app. You **MUST** use TARGET for this script to work, it runs in the background while you play the game. I'm pretty sure it will also work by loading it with the TARGET script editor app, but I used the GUI app to create these, and the use of the Script Editor is beyond the scope of this doc. I'm also going to assume that you understand what a shifted function is (pressing the S3 button in our case, causing a second function mapped to a specific button to be activated). Note I purposely did NOT use the Boat Switch layer function in these scripts (Forward (Up), Middle, Back (Down)), and although it is mapped as different layers in the script setup, for the purposes of these scripts the Boat Switch is used in a similar manner as any other button on the Warhog, ie it does NOT invoke the Forward, Middle or Back layer when it is in the corresponding position. As well, I am going to assume you know the difference between a pulsed command, and a held command. Very simply put, a pulse command sends the command only once when you activate the key, ie only one instance of the command is sent. This type of command is used for commands that only need one instance of the command to be sent, auto pilot for example. You only need to hit "a" (in our case LSHF a) once to get it to work. A held command, on the other hand, keeps on sending the command as long as the button is held down. Firing guns is a good

example of this. The guns keep firing as long as you hold the fire key down. They stop once you release the fire key. The default is pulse, I will indicate where the function is a held function. Other functions that may show up in the scripts are Press/Release (where one specific command is sent when the button is pressed, and another (potentially different) command is sent when the button is released) and Sequenced, where on the first press a specific command is sent, and on the second (third, fourth etc) a different command is sent.

So, load up the IL2 – BOS Warthog – Planes Profile.fcf script into your Thrustmaster system, it should appear as Thrustmaster Combined in the joystick control panel once the script has been loaded and is running. Start Track IR, any add-on and comms program (Teamspeak, SRS etc) you want to use prior to starting IL2. Once the TARGET script is running, I always bring up Device Analyzer (bottom left button on the GUI script is running screen) to ensure the joystick, throttle and rudder pedals are in fact serviceable (just move each item, you will see the corresponding axis move on Device Analyzer). For Track IR, make sure that F12 is used to re-center Track IR, F9 is used to pause Track IR, and F7 is used for Track IR Precision Mode. For Simplified Radio System (SRS) (<https://forum.il2sturmovik.com/topic/63326-installation-and-usage-of-srs-for-il-2-voice-comms-app/>) and Teamspeak 3 (TS), make sure your keybindings for those add-on apps correspond to those listed on the IL2 – BOS – Checklist.pdf.

The first time you run IL2 with this loaded, you will have to change the game key bindings to match what is in the script, or the script will only partially work. THE DEFAULT KEYBINDINGS WILL NOT FUNCTION CORRECTLY IF YOU USE THIS SCRIPT!!! Don't panic, it's easy to do. Method 1: In the Darkdiz BOS Keymaps etc spreadsheet, under the first tab is Default Darkdiz Keybindings, you will find the current out-of-the-box keybindings in the first column, and next to it the Darkdiz bindings and then remarks. On the Key Mapping page under Settings in the game, change the default keymaps to the Darkdiz keymaps. Method 2 (recommended): see Darkdiz\_Current.map explained in "Other Files" section later. \*Some folks have reported that method 2 doesn't always work, but I had no issues with it, as the current.map file gets overwritten to default when starting the game. If it doesn't work for you, simply use method 1.

You will also have to bind Pitch and Roll to the joystick as appropriate, as well as Yaw to the rudder pedals. Left and right wheel brakes will be bound to the left/right rudder pedal brakes, Engine Throttle control to the Right Throttle lever, Prop RPM control to the Left Throttle lever, and engine mixture control to the Throttle Friction control. These axis bindings are only done in-game, they are not controlled by the TARGET script (they could be, but it's easier to bind them in the game itself). See above for specific axis etc. The remaining buttons are controlled by the script, so when you press for example, the Joystick Hat 2 Up, the game will see the keypress "a", as if you had pressed it on the keyboard itself.

I found out quickly that changes were required to the Default Keymaps for the scripts to be more efficient. This was evident when I originally tried to map, for example, LALT b (Bombs Armed Toggle) to a particular button and found out that I was releasing bombs when I activated that button on the Warthog. This proved problematic, and was not limited to bomb release, it was evident on other default key bindings (I tried to eject using the default LCTL e binding, mapped to the LTB button on the Warthog, but instead, stopped the engine, default binding was e alone). Easy to see the problem. I think it has something to do with how quickly the game can receive keystrokes from DirectX. To address this, I ended up remapping most single-key bindings (key b by itself for example) to bindings requiring a second, shifted key pressed concurrently (L/R ALT, L/R SHF, L/R CTL, L/R WIN). So now bomb release is RSHIFT q, no chance of inadvertent release of bombs until I am ready, and command it!

The fcf script has a corresponding pdf file indicating what button does what for each aircraft group. I recommend printing selected pages from it as a kneeboard of sorts for easy in-flight reference until you are used to the specific aircraft controls. Fun fact: The picture behind is me in real life in a RCAF CT-156 Harvard over Moose Jaw doing T&E on the helmet.

So now we have the TARGET script loaded, the appropriate axis bound to the corresponding levers/joysticks and the proper keybindings setup in-game, time to have a look at each of the different controls.

Starting at the top left of page 3 of IL2 – BOS Darkdiz Warthog Layouts pdf sheet (All Planes), the legend is self-explanatory, some controls are only available to a specific aircraft, and some are common for all aircraft listed on the aircraft-specific pdf sheet. I used superscript numbers and symbols (<sup>1</sup>) to indicate which aircraft the control applies. Although they don't appear on THIS pdf page, they appear on all the others as necessary.

On the bottom right, is an image of the Warthog system, with the button and switch names listed. These names correspond to the box names on the sheet. If one of the button names does not appear at the top of any of the boxes on the sheet, it is not used for that script (IDLELOFF for example).

Now we get into WHY a specific control is on a specific button... (The assumption here is that Darkdiz keybindings are being used).

Remember, pitch, roll, yaw, L/R brakes, mixture, and RPM are mapped in the game to the corresponding axis on the Warthog system. Each of these axes are adjustable for sensitivity in-game, AND in TARGET. In a room of 10 pilots, you will get 25 different opinions on what is the best joystick sensitivity profile! Play with this setting, you will eventually find a sweet spot. My settings should remain in the fcf file but play with these settings as you see fit to find your own preference.

Joystick Hat 1 (Box H1) (Also called the POV Hat, but NOT for these scripts, see Hat 3)

All the trim functions are mapped to this Hat, much as in a real AC. Nose pitch up/down, rudder yaw R/L and aileron roll L/R are all there, and trim reset. I put the aileron trim control as a shifted function instead of the rudder trim, as more aircraft in the game have rudder trim than aileron trim. All are held functions. Engine boost can also be found here because I originally had 2 maps on this hat for trim reset, and after deciding to move another function to Hat 4, where engine boost used to live, I ended up moving it here in place of one of the trim reset functions.

Joystick Hat 2 (Box H2)

Pretty straightforward, all the autopilot functions are found here as un-shifted functions. A reminder that for Autopilot L/R to work, Level Autopilot must be ON. The shifted functions load specific flare colors into your flare gun in preparation for firing or load your personal weapon (pistol). Red is left, green is right, white is down, and personal weapon is up. Firing a flare or personal weapon will not occur if the canopy or window is closed (open cockpits do not have this limitation). To select any one of these, the canopy or must be opened prior to any selection made. On some aircraft, selecting one of these automatically opens the window or places the flare gun in the appropriate position, it varies between aircraft.

Joystick Hat 3 (Box H3)

Simple ergonomics dictated that all the POV keys got mapped to this hat... I found it almost impossible to reach Hat 1 to shift my views when I needed to. Yes, I know I have Track IR, but I STILL need to have specific views mapped to this hat (close gunsight view?). Supplementary views are available with the CSU, CSD and SCP buttons used at the same time. So, if you want to look back and up at the same time, you press Hat 3 Down AND the Coolie Switch up (CSU). All of these are held functions and are unshifted, if you release the button(s) you will return to the default forward view in the cockpit (assuming you are in Centered Quickview snap mode). Note that these views should be customized for each aircraft in the game using the following procedure (I recommend you do this on the ground, although you can certainly tweak it airborne):

- 1 – Pause Track IR (LSHF+LCTL F9)
- 2 – Change Pilot Head Control Method to Fixed Snap (LALT F9)
- 3 – Establish the view you want to edit using either the numerical keypad or the joystick POV hat with the corresponding view modifier (CSU/CSD/SCP). Since you are in Fixed Snap, the view will stick.
- 4 – Using the Mouse, Ins, Home, Pg Up, Del, End, Pg Dn, KP+, KP-, move the camera around until you get the view you want for that view combination.
- 5 – Save the view with F10.
- 6 – Repeat the procedure for any other view you want to edit/optimize.

7 – Unpause Track IR (LSHF+LCTL F9), test out the view combination.

\* - This YouTube video is pretty good for this procedure

(<https://youtu.be/wYeuJpC63fY>)

Of note here is that I setup a “Darkdiz Standard” set of views for all the aircraft in the sim. Note though, that there are AC-dependent views that need to be setup on separate AC, so having one set of snap views for ALL AC does not work very well. I have them listed on the Checklist pdf under Standard Mapped Views.

This box gives you the specific button combinations for each view that has been setup. More details later...

After many experiments, the shifted functions on this hat switch are used to switch radio channels. Teamspeak uses the shifted up and down switch to switch to next/prev channel, and SRS uses the L/R switch for the same function.

#### Joystick Hat 4 (Box H4)

Most of the comms except the channel switches are here. I found that occasionally pressing this hat did not always give a true press due to my finger not pushing directly down. What would happen is instead of getting a H4P function, I would get a different function, such as the H4L switch, not what I wanted. Since channel switches USED to be here, I would occasionally go off channel, wonder why it was so quiet! Not an optimal situation. So, this hat ended up going through several iterations. After much testing, I ended up grouping all comms PTT functions here, having H4U, D and Press used to transmit on either TS, TS Whisper or SRS radio 1, 2 or intercom. In general, unshifted, it is TS, shifted it is SRS. When a specific radio is transmitted, the corresponding LED will light up on the throttle (1 – SRS 1, 2 – SRS 2, 1 AND 2 – SRS Intercom, 3 TS Whisper All, 4 TS Whisper Wingman, 5 – TS Selected Radio). The TS Whisper functions are something you need to setup in TS if you want them to work properly. Merely make the TS Hotkey the same as what is mapped here. (If you want me to walk you through this setup, pm me on the forum, but this function works very well). Remember, any function assigned to any button or switch on the joystick is still seen as a keyboard function by the game, or add-on software. For them to work in an add-on, the corresponding keybind must also be setup in the add-on. H4L and R are used to manually control the water radiator (unshifted) and the oil radiator (shifted). You need to first be in the manual rad control mode for this function to work.

#### TG1

The Warthog joystick features a 2-stage trigger, with separate keymaps available for each. TG1 is the first stage and is activated by a light press on the trigger. Squeeze it all the way, you get TG2. Early on, I discovered that using a hold function to fire guns was necessary (pulse merely fired 1 round, or 25ms worth of armament, not a lot when you want to shred the target with as much lead as you can fire!). The problem was that “holding” TG1 in some cases precluded TG2 from being activated. Hence the change in the default keymaps. Typically, TG1 fires machine guns (weapon group 1), and another key would fire only cannons



(weapon group 2). To simplify this, I mapped the shifted TG1 function to weapon group 2, so precious cannon rounds are not wasted. Held function.

#### TG2

Irrelevant to the shift switch, TG2 lets 'er' rip with all guns. Held function.

#### S1

Drop Bombs/Cargo (or paratroops, aerobatic smoke etc) and (shifted) fire rockets, this is straightforward. I prefer using the S1 button for these functions as it fits my hand better, so I don't have to contort as much to get to a finger on the S1 button, vice my thumb to the S2 button.

#### S2

Fire Personal Weapon/Flare Gun is on this, as the shifted function. Firing a flare or personal weapon will not occur if the canopy (with a few exceptions, this is aircraft dependent) or the window is closed (open cockpits do not have this limitation). Unshifted, the Jettison Stores (used rocket canisters) command is here.

#### S3

This button is used to shift a specific function to an alternate function mapped to the same button. On the PDF sheet, a non-shifted function (S3 button NOT pressed) is indicated by /O (Keypress) (Function Name), and a shifted function (S3 button pressed) by /I (Keypress) (Function Name). If there is no /O or /I, the mapped function will be activated regardless of the S3 position.

#### S4

After several iterations of figuring out how this could best be used, I discovered a function called Quickview. This gives the user a very quick view zoom function, critical when trying to identify something from a distance. What is nice here is that it can be used regardless of what view you are in. So, if you are using Hat 3 to look to your left, use this function to instantly zooms that view to 30deg. Release it, it returns to the normal FOV (105deg if you use my snapviews). It also functions when using Track IR, the difference being that you can still move the view around while it is zoomed. This was a gamechanger IMHO. Note: In TARGET, the recommendation is to use this button vice the S3 button to invoke a shifted function. I humbly disagree, it is MUCH easier and requires much less hand position manipulation to press S3 with your pinky that it does to press S4. It is unshifted. The shifted S4 key (S3 and S4 at the same time) re-centers Track IR.

So much for the right hand, on to the left hand, the throttle...

As mentioned before, the following levers need to be mapped in-game on the Key Mapping page in-game:

Right Throttle to Engine Throttle Control

Left Throttle to Engine RPM Control

### Throttle Friction Control to Engine Mixture Control

While we are talking about axis mapping, and so I don't have to cover it later, map the yaw axis to the rudder pedals, and the left/right wheel brakes to the left/right rudder wheel brakes. Note that sometimes the brakes don't map right away, because they need to see an intermediate starting value. If you follow the mapping instructions EXACTLY you will see that to start the wheel brakes mapping you MAY have to start with the appropriate pedal already HALF-WAY pressed. This gives the mapping routine a starting value that is in between the min/max value, so it stays happy. That is what I had to do anyway. But I digress...

### MSU and MSD

After flying several aircraft where the prop pitch control is a switch instead of a lever, I decided to simulate the actual aircraft as closely as possible and put the Prop Pitch high and low function here. They are both held and shifted functions, but only work if you are in manual prop pitch control mode. The un-shifted function will open or close the Turbosupercharger on the P-47 and the Altitude throttle on the Fokker DVIIF (same keybinding).

### MSL and MSR

Engine Cowl Shutters, Outlet and Inlet Open and Close, non- and shifted respectively. These are all held functions.

### MSP

The shifted function of this key changes firing position (overwing Lewis guns for example). Unshifted is the Reload Guns function which will reload/unjam turret guns (and main guns in Flying Circus). In addition to reloading any of your turret or nose-cowling guns in Flying Circus, it also will clear gun jams.

### SCP

Pressing this will give you the Snapview DOWN view modifier, it is a held function.

### SC Axes

Adding the SC axes as keyboard functions was a later edition and only occurred after the realization that you don't have to assign the SCX/Y axes to any Direct X axis (remember, a Direct X limitation is that there is a max of 8 axes per controller available, we are already maxed out in this regard if you have TM rudder pedals). I have mine assigned as "None" for both SCX and SCY on the axis-assignment page in TARGET, which still allows you to assign keyboard functions to them, it works fine.

Installing the Deltasim modified switch effectively gives another hat with a push-button function, however, since it is on an axis, it must be programmed as such in order to obtain any functionality. Even though the setup has this switch axis unassigned to any DX axis, single function functions can still be assigned.

However, since it is still an axis, a large deadzone must be used, with the actual function triggered at the extreme ends of the switch axis travel. I have the axis setup so the mapped function is triggered only after about 90% of travel. You can experiment with these to suit your personal taste. I also manufactured a supplementary guide for the switch axel, so the SCX/Y only travels in the direction I want, with no movement on the other axis. PM me if you want a pic, it is easy to do.

#### SCX (L/R)

FOV + and -, straightforward, held functions.

#### SCY (U/D)

Pull this up, you get the Snapview Up modifier, push it down you get the Snapview Custom modifier. If you set up your views like I did, the push down function here gives you the steady gunsight view. All are held functions. Note: If you decide to use my snapviews (included in the package), there is a neat bonus I have included which gives you a SECOND gunsight view, but slightly zoomed closer, giving more precision if desired (70deg is the standard, but you get 50deg if you use the SCY/D switch AND HAT 3 up). I manually edited each snapview file to get this to work. Another useful thing on this button is when flying with an overwing Lewis gun mounted, I have set up my snap views so that if you have the gun firing upwards and use the SCU function, you will be aligned with the gunsight, very similar to the gunsight view explained above.

#### CSU and CSD

Engine Blip (down, non-shifted) is here, a held function. Up, non-shifted, toggles the map view. The shifted functions are used to adjust the gunsight vertically up to 5° to compensate for rocket trajectory. So far, this is only available on the Typhoon.

#### CSL and CSR

Gunsight adjustment functions are here. If your aircraft is equipped with an adjustable sight (must be equipped to function), the range and base adjustments are mapped here, all are held functions. It is critical to get the proper distance setup on your sight to match up with your gun convergence. Not to confuse the issue, but on some aircraft with adjustable gunsights (RAF, US), the distance is in feet/yards. However, gun convergence set up on the aircraft setup page is in meters, so in some instances you have to convert your desired convergence distance from meters in the setup to yards on the actual sight (230m is what I generally set up for my gun convergence if flying a Brit aircraft, which is 250 yards. The base range is usually set to equate the wingspan of your prey. So, for example, if I am thinking my likely quarry will be a BF-109, its wingspan is around 10m, which is about 32 feet. So by setting up your sight with those parameters, the distance between the inner tips of the horizontal lines bisecting the sight ring (20/30 degrees angle off) is what 32 feet looks like at 250 yards giving you a pretty accurate range. Also remember, that if you use distance icons, they are

also in meters, so when the icon says 0.23, the target is at 230m, or 250 yards. Other sights such as the German Revi or the US N3 or N9, use 250m (275yds) as the recommended convergence. To optimize the sight ranging function, I recommend you go with these convergence distances.

#### LTB

The reason is that this button is only a shifted function, is because it is used to leap to an uncertain fate (eject). After activating this on more than one occasion inadvertently (once on a 10-kill offline streak), I made this a shifted function, so you need to hit S3 at the same time to jump. Having this mapped to a different keybind than the default (LCtl e) will also stop the on-line multiplayer pranksters from telling noobs that LCtl e is a secret keymap code that toggles the GPS...

#### PSF and PSB

All the aircraft lights are on these switches. Once you switch a particular lighting system on, say for example the Nav lights (PSB /O), remember to return the switch to the center position (use it as a momentary switch) so you can turn on or off another lighting system. See the pdf for specific lights.

#### FLAPU and FLAPD

This switch controls Flaps (non-shifted) and Landing Gear (shifted). Some aircraft need continual input for their flap system to operate, and some have set positions. For example, a Spitfire Mk IXe flaps are either fully up or fully down. A Tempest Mk V on the other hand has continuous flaps, so the switch must be held in place until the desired flap amount is reached. In this case, the flaps will continue to extend/retract to their max extended or completely retracted position if this switch remains in the up/down position. To stop the motion, you must release the switch allowing it to return to the middle position. The shifted function is straightforward, Landing Gear up/down.

#### EACON

Bomb sight (un-shifted) is a press and release function. Keep it forward to ARM, you will stay in the bomb sight mode. Return it to OFF and you will revert to the pilot position. Shifted, the canopy open/close function is found here.

#### RDRNORM

The Bomb Bay Doors switch is here, unshifted, press and release. Shifted is the Bomb Delay control.

#### APENG

This is used for the Bomb and Rocket Salvo Mode function (un-shifted and shifted respectively), where you choose how many and/or which bombs/rockets you use first.

#### APPAT and APALT

The control mode (auto/manual) for prop pitch, oil radiator and water radiator, as well as the supercharger gear switch are here. Remember, if you switch to manual mode, you still must manually operate the specific control, this only changes its mode. For the supercharger, this switch toggles the supercharger gear manually if the aircraft has this capability.

#### LDGH

The Flight Recorder On/Off is shifted. The unshifted function of this is the parking brake function for aircraft that have this capability. This is used with several aircraft that have toe brakes to set or release the parking brake.

#### THRL

This is an axis set up on the Key Mapping page in the game itself. It is mapped to the Prop RPM control. In general, you can control the RPM independent of the Right Throttle position, but to do this you must unlock the left throttle from the right throttle (small lever on the front of the left throttle).

#### IDLERON

I really like the way this worked out. The engine toggle is mapped to this “button” although it is not a button in the true sense of the word, it is closer to a throttle position. To work this and commence the automatic engine start process, you have to “lift” the right throttle over the stop at the extreme rear of its travel. Once the switch has been made, the throttle is once again “lifted” over the stop and returned to the desired start position. Note that this will start ALL engines. I discovered that this process also starts the ME262, which has additional steps (see EORIGN for further explanation of the ignitor).

#### TFC

Also set up as an axis in-game, this lever controls the engine fuel mixture, rich is forward, lean is back.

For the remaining switches, I tried to group them in the most logical fashion, so that it is relatively easy to train and remember without assistance.

#### APUON

Unshifted, this switch will feather the selected engine, and shifted will arm any bombs you are carrying.

#### EOLIGN and EORIGN

These switches are momentary spring-loaded and will return to the rear position when released. In the shifted position, this restarts a selected engine. It is the same function that is mapped to IDLERON, however, this particular function should be used to restart a failed engine. It is critical to note that prior to using this function, you MUST select which engine you want to restart. If you don't, your good engine will stop. So, common control for engines must be turned OFF and the appropriate engine selected for this to work properly without unintended

consequences. The R switch is jet turbine related. The switch is held and will ignite the turbine on a jet engine once the starter spins it to a certain RPM (ME262). Remember to "select" which engine the ignitor will start. Note that if the normal engine start sequence is activated, this function is automatic. This function is used for a manual air restart. The jet engine ignition function is used as follows: once the engine RPM comes up to the necessary level from the starter motor, this switch is held to complete the start the jet engine (kind of like a barbeque sparker). The automatic engine start process (engine assist ON) includes this step, but I left it in because I am not sure if it is needed for an air restart. I'm pretty sure it is needed for manual engine starts (no engine assist). The shifted position is for specific aircraft with unique controls, such as the P-47. The P-47 Interconnect Throttle and Prop/Throttle and Turbo are here.

#### EORMOTOR and EOLMOTOR

These switches are for game realism-set engine assist functions. If your realism settings allow, you can use these switches to either selectively turn off or on Auto RPM Limiter. EOLMOTOR selectively controls Automatic Oil and Water Radiator Control (non-shifted), and Engine Fuel Mixture/Engine Supercharger Control (shifted). EORMOTOR in the shifted position controls Automatic RPM Limiter Control. To switch all of these either on or off, use EORMOTOR in the non-shifted position. These are different controls from the keys mapped onto APALT and APPAT.

#### EFLNORM and EFRNORM

The shifted position on both are gunsight related. L adjusts the gyro function on a gyro gunsight (must be equipped, not all gunsights have this capability) and R brings up a sunlight filter on gunsights with that feature. If the unshifted function of EFLNORM or EFRNORM is activated, it starts/stops the rearm or refuel process respectively when on the ground at bases that have this function activated. Note that this function must be activated in the mission or server setup to work (look for the icon in the bottom left of your screen). Repairs are done automatically once you turn off your engine, including medical assistance to a wounded pilot. When the icon stops flashing, you are completely repaired, refueled and rearmed, and 100% healthy. Sometimes this does not always work, and you will get a notification in the cockpit that repairs are impossible.

#### CHB and CHF

The shifted function is the Contact Altimeter +/-, only found on very few aircraft. Unshifted back, the Gunsight Position switch is here (this function, although seemingly a bit out of place) is here as it ended up being an orphan, so this seemed the best home for it. It may move in subsequent updates, but there are only a few aircraft that have this function. The un-shifted forward function of this button is used to fire Weapon Group 3 only. There are currently no WW2 aircraft in BOS that use Weapon Group 3. So far, the Sopwith Dolphin in Flying Circus has this available, and then only if you equip the overwing-mounted Lewis guns. is the Change Firing Position command allowing over-wing-mounted Lewis guns

on some Flying Circus aircraft to be adjusted, which changes the firing angle (allows the gun to fire in an upwards direction vice forward). Obviously, this must be equipped to function.

#### BSB and BSF

I purposely did NOT map Boatswitch layers in these scripts, because it just gets too complicated. I found I could get everything mapped without the layers anyway. For the actual functions mapped on the boatswitch, they have gone through several evolutions. The unshifted forward position toggles the tailwheel lock/unlock in aircraft that have this feature. If it is left in the forward position, the tailwheel is NOT locked. Put this switch back to the middle position to lock the tailwheel. On other aircraft with a lockable tailwheel (FW-190 for example) the joystick locks the tailwheel by moving the joystick to the rear. Shifted forward, this activates the Dive Recovery system, if you want to use it independently of the auto-activation found on the SPDF switch. The back, unshifted position centers the pilot's head. Shifted back is the reference pressure toggle for the altimeter, switching between local field elevation pressure (QFE), and Mean Sea Level pressure (QNH) setting.

#### SBDB (Non-Locking)

The unshifted function here is differential wheel brakes. Note that even if an aircraft indicates it has individual left and right brakes (most US and German AC), the differential wheel brakes work anyway, applying brakes to BOTH wheels when used. In cases where the aircraft is equipped with true differential wheel brakes, centering the rudder pedals causes BOTH wheel brakes to actuate, and pressing one or the other rudder pedal (not the rudder brake pedal) causes the wheel brake on that other side to release. So, if I wanted to make a left turn while taxiing, I would actuate the differential wheel brake, and press the left rudder pedal. The left wheel brake would remain actuated, but the right wheel brake would release, causing the nose to swing toward the left. Once out of the inevitable ground loop, an attempt to get back on the taxiway can be made... This is a held function. The shifted function of this button is Nose/Tail brakes, also held.

#### SBDF (Locking)

Double-mapped, this switch combines in the non-shifted mode the actual airbrakes toggle with the JU87 siren, the Trumpets of Jericho. This is a common practice, as the JU87 dive brakes and siren would be used simultaneously. In other aircraft that have airbrakes (P-38), only the actual airbrakes are mapped. Since this switch locks in position, it is a press/release function, meaning that the airbrake will stay extended while the switch is locked forward, and release when it is returned to its central position. An interesting feature of this game key is that when the airbrake is activated, the Dive Recovery System (if the aircraft has it) will also automatically activate. It will cause the aircraft to enter a controlled dive. When the airbrakes are retracted, the Dive Recovery System will automatically cause the aircraft to attempt to recover from the dive. In practice, you will also

have to “help” this system with some back-pressure on the stick. The forward shifted position is the quickview maximum function and is a press/release type. So if you are using this function, when you put the switch back to its middle position you will automatically go to Quickzoom Minimum, which is the Darkdiz default view (105deg FOV) (essentially, it resets you to your standard FOV). These functions are VERY useful when you need to see more detail on something at a distance and are all held functions (the view will stay at maximum while the switch is in the forward position). The Quickview maximum function is also mapped to the S4 switch, and it is duplicated here because the SBDB Forward switch locks into place, the S4 does not. These functions work with either Centered Quickview or fixed snapviews (HAT 3). If used WITHOUT HAT 3, you can still move your head, and the Track IR will still track and move the view. If used WITH HAT 3, the view will zoom in, but remain fixed (Track IR will not move the view).

So now we have an explanation and thought process for each of the controls mapped onto the various buttons on the Warthog. All that remains now is to set up your flying environment so that the pdf kneeboard is handy for quick reference, and off you go.

For those who were clearly felled and hit their heads, causing them to suddenly have an insane desire to drive tanks, I made a profile for Tank Crew: Clash at Prokhorovka. Out of necessity, it is much different than the others in the system, since tanks have things that aircraft don't, and vice versa. I don't think it is hugely necessary to go into the detail as to why maps are where they are like I did for the air versions. The keymaps included in the fcf will be on the pdf. One thing though, I found that the best way for this to work is to have the joystick control the turret exclusively, your rudder pedals take care of vehicle left/right, and your throttle (either left or right) controls vehicle speed. Remember though, if you pull the throttle all the way back, you will be in high-speed reverse, as the center (50%) point on the throttle axis is the 0-speed point. Having the throttle forward of this point will give you forward speed, pulling it back will act as a brake. For the rest of the quirks in the tank section (for folks used to flying aircraft, there are quite a few!), I'll let you figure out them by yourself <eg>

Goodies I included in the spreadsheet are as follows (All are printable on 8.5x11 paper):

Darkdiz Default Key Bindings – what is bound in the game for default out of the box, compared to what I have changed my key bindings to so that the scripts I wrote match up and work as advertised.

Used Key Bindings – A quick reference for what keys have been bound, and more importantly, what keys are available for use. Makes it easy to find an unbound key instead of hunting and pecking on the in-game Key Mapping page.

Plane Specific Bindings – A reformatted version of Hipsu's magical spreadsheet with all the controls available for each aircraft. I copied the link into this doc



earlier. As more AC are released, I will try and keep this as updated as much as I can.

Tank Specific Bindings – same idea as the Plane Specific Bindings tab.

Altitude/Distance/Speed – A quick conversion page of common units used in the game.

Settings – These are my personal settings, so that if I need to, I can easily re-enter them if for whatever reason the original file becomes corrupted, and the defaults take over (not that that has EVER happened...). I also included best settings IMHO that you can use when tweaking your custom views (more on that later). I recommend you add a column to this TAB for your own personal settings. Speaking of backing stuff up, I HIGHLY recommend backing up your config and snapview files, it is a PITA to remap them if you must re-install the game for whatever reason. I have my startup.cfg file, as well as my inputs folder and snapview folder (found in the LUA Scripts folder) in a non-game folder, so I can at least get back to a workable configuration with little or no fuss.

A big portion of this system is the layouts pdf file. Here are all the keymaps that are on each button on the joystick and throttle. I tried to minimize the number of pages here, but simply putting ALL the functions onto one page covering all the aircraft was not possible, as there are far too many permutations and combinations available. I therefore grouped similar aircraft together onto separate pages. The “All Planes” page gives all the functions on their respective keys; not which aircraft has this function. Individual aircraft group pages give that info.

I included all the engine specs and WHAT engine controls are available for each aircraft, found in the Engine Specs file. Personally, I have each page printed and stuffed in a page protector with its respective aircraft layout, so all I must do is turn the page over to see the engine info. This info was taken stat-for-stat from either Requiem’s Air Combat Tutorial Library (see link earlier), (PB) Spiff’s Simple Engine Management sheet (<https://forum.il2sturmovik.com/topic/41881-printer-friendly-engine-management-sheet/>), <https://forum.il2sturmovik.com/topic/25993-aircraft-flight-and-technical-specifications-and-operational-details/> or Deadreckon.net Kneeboards (<http://deadreckon.net/il2.html>). They are also found under Specifications on the Mission page in-game. These in-game specs are the most up to date.

The remaining pages in this file are just a checklist of sorts that I came up with, like a generic aircraft checklist including pre-start/pre-take-off check, post take-off check, pre- and post-landing checks among other things. I also added keymap listings for those commands NOT bound onto the joystick, flight lead and gunner commands, camera view commands, individual engine control commands, standard mapped views and the key/button combos needed to get there, and communications commands. I find this to be a very handy in-flight resource, I use it a lot. The final page is my Logitech G13 layout, I use that as a

radio/comms panel. If you don't have something like that, then this page can be ignored.

The snapviews folder contains all my re-mapped views for all aircraft currently in the game. Pilot and crew positions are all there. If you want to use them, the thought process behind these is that they COMPLEMENT Track IR. The views are VERY aircraft dependent for the most part, but I employed a few generalities while remapping these:

1 – The widest FOV possible for standard views (unmodified KP1-9), up modified (KP0 or CSU on the throttle) or down modified (KP Enter or CSD on the throttle). If you want to zoom in, use the FOV Zoom In button (KP+ or the BSF on the throttle).

2 - The down mod also gives a view of the upper instrument panel, and lower instrument panel if used with KP8 or H3U.

3 - Custom Mod views (KP. or SCP on the throttle) are generally close gunsight, closer gunsight, close nose L/R, cockpit or wing fwd, cockpit or wing aft (VERY aircraft dependent). If used with KP2 or Hat 3, I put a close mirror view, or if not equipped with a mirror, an instrument of choice (generally a close view of the compass).

4 – Standard views are gunsight centered. This may be somewhat disconcerting when flying aircraft with offset gunsights (some Axis aircraft), you're NOT lined up exactly when flying around. You ARE lined up when you lean to the gunsight (SCY down). This, of course, is a highly personal preference, as some will no doubt prefer to be centered in the cockpit. I found that leaning into an offset gunsight from a central cockpit position causes the target to move on the windscreen, making it much easier to lose sight of it. Another thing I discovered is that Quickviews (mapped separately) work WITH Track IR (that is, if you use a Quickview to zoom in, Track IR will still track the movement of your head and the view will shift with it, unlike HAT 3 views, which override Track IR).

5 – Tail gunners are also VERY aircraft dependent. I generally tried to get as wide a FOV as possible in aircraft with only a tail gunner. With multiple crew positions, this did not work very well, so I set up narrower FOVs. I also discovered that when you nestle to the gunsight, the FOV is a constant amount narrower. If you change the FOV in the nestled mode, you also change the un-nestled mode by the same amount. Turns out views are highly personal, I gave you my set, feel free to use them as is, change them etc. I make no apologies for them; they work for me!

To use these views, do the following:

1 – In the game itself, take note of your settings under Settings/Camera. Write them down...

2 – In the data/LUA Scripts folder, copy all of the files (no need to copy the folder called default in there) to a non-game folder (I call mine config backups and it is in the data folder).

3 – Copy and paste my snapviews into the data/LUA Scripts folder, replacing the files you just backed up. The new snapviews are now what you will see.

4 – Not quite done yet. In the game, under Settings and Camera, you MAY see that the settings that were there are somewhat different now. The problem here is that to set these views up, I changed these settings on my system temporarily to be VERY slow, but incredibly precise (not good for general flight). You need to change these settings back to what was there before (remember what you wrote down a few minutes ago?). Failing that, you can use the settings I included in the spreadsheet in the Settings tab. They work fine for me. Note that to tweak your views, it is slower, but far more precise to use the alternate settings for the camera found in the Settings tab of the IL2 BOS – Darkdiz Keymaps etc.xls file. Once you are done with your tweaks, remember to put the camera settings back to where they were. Also remember to set these up so that you like what you see, and the views change at a speed you are comfortable with. I experiment with mine constantly.

If you merely want to change the default views, see Joystick Hat 3 above for the procedure.

Note: Should you want to free up some switch space for other functions you might use, this might be a good place to consider (Hat 3). However, you still need to do the snapview setup for the gunsight view to work properly.

#### Other Files:

Darkdiz\_current.map, which is all the updated Darkdiz keybindings you need to use for these profiles to work. This is important, as the default keybindings were changed significantly. You can either copy this file into the data/input folder of the main game (AFTER FIRST RENAMING current.map to something else, and then renaming Darkdiz\_current.map to current.map, this saves a bit of time and you know all of them are properly updated) or you can change each keymap manually in-game (I talked about this at the beginning).

IL2 BOS – Darkdiz Thrustmaster Macros.ttm is just the macro file associated with the Darkdiz profiles. Although not directly used by the fcf profile in TARGET, it makes it very easy to edit or create a new TARGET profile, as all the proper TARGET syntax is there. You just import this file into whatever profile you want to change and pick the specific control you want to edit from the imported events. For more details on this, see the TARGET User manual.

IL2 BOS – Default Thrustmaster Macros.ttm is the same as the other .ttm file, but the definitions are for the default settings and keymaps out-of-the-box. If you are not using the Darkdiz system and prefer to use the default key maps to program your Thrustmaster, use this file to import all the default key maps into your personal Thrustmaster profile you want to create. It saves you typing them in yourself. Note that these 2 ttm files use USB codes to maximize compatibility between different types of keyboards. Don't worry, the US keyboard decode is included on each line, you will see exactly what the key command is once you import it into TARGET.

Engine Specs, Plane Specs and Gunsights are files that contains quick reference pages for in-flight info, and a gunsight range chart for each type of gunsight.

Clearly, these will be awesome for some, and not so great for others. Feel free to edit them as you like.

I hope these files are useful for you, if you have any questions, just let me know. As new versions of the game are released, and new aircraft added, I will try and update the files as necessary. Remember, this is a work in progress, I am still working on different changes/upgrades/more logical approach to keybindings etc.

In the meantime, keep your eyes out of the cockpit!

Darkdiz