

TotalSims WarBirds

List of Updates to the Simulation

November 2017

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Changes in Release version 4.31 R3 (11.09.17) fl2051

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Fix ground objects to be destroyed hollow box indicators

----- FM UPDATE FL2051: -----

Fix for Lancs, hurri1s,zero

New Terrains from JABO

Malaysia

Luzon

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Changes in Release version 4.31 R2 (11.01.17) fl2050

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New chase view (alt-v). Chase view now moves more naturally around based on the direction of flight. To force the "old" chase view use the dot command

.OLDCHASEVIEW 1

----- FM UPDATE FL2050: PACIFIC WAR -----

By: Robert, Bollok, Grumpy and Idunno.

3D art: Madcat (N1K1-J cockpit).

All made possible by: Bcamel (creator of the program used to model the airplanes)

This info along with detailed performance graphs can be found at:

<http://bhlanding.iient.com/warbirdsforum/viewtopic.php?f=8&t=213>

--= P-40B (only the -B model, not the whole series) =--

Complete rehaul of the P-40B Tomahawk. The whole P-40 series will be remodeled at a later date. See below for details.

--= A6M Zero series =--

Complete rehaul of the "Zekes". See below for details.

--= N1K1-J George =--

Complete rehaul of the "Shiden". See below for details.

--= F4F & FM2 Wildcat series =--

Complete rehaul of the Wildcat series. See below for details.

--= F6F-5 Hellcat =--

Complete rehaul of the F6F-5. See below for details.

--= Avro Lancaster series =--

Complete rehaul of the Lancasters.

NOTE! You can no longer chop throttle to 1% without stalling and spinning out in bombardier view. A realistic ww2 bomber needs to maintain enough power to keep above it's stall speed. See below for details.

--= De Havilland Mosquito IV and NFII =--

Complete rehaul of the Mosquito IV and Mosquito NFII. See below for details.

--= Lavochkins ---

Tweaks to handling for better agility (pitchdrag/yawdrag change).

--= Yakovlevs ---

Rollweight slightly increased.

==== THE P-40B TOMAHAWK REHAUL ===--

The P-40B is well known for having been used in nearly every theater of the war. While not having any defined strength, it is a well designed all-around fighter machine that was able to hold the line against the opponents it faced in WW2. At full fuel the Tomahawk weighs 7559 lb and is fairly heavy for an early war land based fighter. Its best fighting altitude is at 11000-14000 ft where it can outrun many of its enemies, but its Allison V-1710-33 engine quickly drops off in power above 15000 ft so be careful of fighting at higher altitudes. This plane is well armed and is quite a stable gun platform. While some nimble fighters can outturn it in 1v1 duels, the P-40B is a competitive fighter when using wingman tactics.

==== THE A6M ZERO SERIES REHAUL ===--

The "Zeros" or "Zekes" were very well designed airplanes and the A6M2 was by many considered as the very best fighter of its era. The Zeros have large wings and are very lightweight for being Navy fighters. Few enemies can match them in a turn fight and as long as they still have cannon ammo, the A6M's are quite lethal. A weakness of the Zekes is their low max dive speed and the ailerons become very sluggish above 300 mph IAS. The Allied pilots took good advantage of this by diving and then rolling right. The Zeros light weight also came at a cost. They had no armor and could not sustain much damage. With "no armor" this also means that the pilot will not have any backseat armor anymore. (Pilot armor was unhistorically added earlier because of players complaining about pilot kills). If the enemy hits the Zero pilot in the nugget, then he simply hits the Zero pilot in the nugget, even with .303 machine guns. Now the positive side with not being weighed down by armor like other planes is the gain in turning ability and agility, and with good situational awareness this will often play to one's advantage.

--= A6M-21 ---

The A6M2 Reisen is most likely one of the top 3 fighters of its era. With its 990 hp Nakajima Sakae 12 engine it holds a nice top speed and will outturn anything but a Fokker D.XXI. A disadvantage is the float carburetor of its engine, meaning that it will cut out when pushing negative G's. While the carburetor was of a better design than the infamous Merlin III carburetor and able to push a few more negative G's

before a cut out, it is still a handicap that can be exploited by enemies who choose to nose over and outdive the Zero. All in all though this fighter can confidently engage any early era opponent and will often come out on top. Just don't get target fixated and remember it's often better to break off a target if another bandit is sneaking up on you, as the Zero has zero armor.

--= A6M-32 =--

The model -32 and -52a fielded the improved Nakajima NK1F Sakae 21 engine. Another difference from it's predecessor is the clipped wings which allows for a better roll rate, while the disadvantage is slightly less lift from the wings. The A6M3 "Hamp" is not much heavier than the A6M2 and an overall improvement as it has a faster top speed and more cannon ammo. Unfortunately though the Zeros did not evolve as fast as the fighters of other countries, and had their golden era with the model 21. The "Hamp" is still a potent fighter though in it's period and holds a great advantage in the turn.

--= A6M-52a =--

The model 52a was a further improvement and was faster still than the earlier versions. It kept the shorter wingspan of the model 32 but with rounded wingtips, which has a positive effect regarding induced drag and wing efficiency. It also had a somewhat improved design of the flaps and slightly higher max dive speed. The model 52a was 471 lb heavier than the model 21 though which somewhat impaired it's agility. Also the opponents it faced were usually significantly faster and could thus dictate the fight against the A6M-52a, which had pretty much reached it's limit in terms of design. When fighting in the model 52 it can be hard to get a good guns solution on a contemporary era enemy that boom n zooms well, but if one can join a low and slow fürball then the A6M-52a can still very much shine.

==== THE N1K1-J GEORGE REHAUL ====

This fighter is a very potent opponent, and has been called one of the best fighters of the war. The 4x 20 mm cannons pack a strong punch and the "George" or "Shiden" has a good power/weight ratio. Be sure to always use it's excellent butterfly flaps when in a turn fight, as their superior Fowler like design gives great extra lift for little drag penalty. They can be lowered to 9° below 280 mph IAS and to 15° below 249 mph IAS. While several of the later war planes hold a better top speed than the N1K1-J, the Shiden can really mix it in a turn fight. Since it has laminar wings and a fairly high stall speed it can be a challenge to scissor fight vs lighter opponents though, but the N1K1-J is well rounded and can usually find a way to fight most opponents. A weakness of the Shiden was that the engine easily overheated when going full power, so save it's one minute WEP for really critical moments.

=== THE F6F-5 HELLCAT REHAUL ===

The Hellcat was the U.S. Navy's answer against the Zeros. It had good armament and could easily outspeed the them, while holding a respectable climb rate for it's heavy weight. The F6F-5 could dictate the fight against the Zeros which had a hard time catching it. The limited razorback 6 o'clock view means that one will usually find more success in the Hellcat when fighting together with wingmen and watching out for each other. Being a heavy U.S. Navy fighter, the F6F-5 will struggle against lighter land based opponents like the Spitfire or Bf 109 in 1v1 duels, but when fighting in groups you can overcome their faster turn rate by covering eachother and let the guns speak. For it's era the Hellcat is a good plane and especially so for a CV fighter.

=== THE WILDCAT SERIES REHAUL ===

The Wildcats are all rugged and heavy U.S. Navy fighters. If flown in groups with sound wingman tactics, it can give the more nimble Zeros an even fight. Once the American pilots learned how to fight to it's strengths and Thach weave, the Zero's reputation as nearly invincible started to fade. Using the Wildcats in 1v1 duels vs more agile opponents can be dangerous though. As with the Hellcat the razorback cockpit leaves a limited back view, and looking out for eachother's six is recommended.

== F4F-3 ==

The F4F-3 has nice armament and can dive well while actually holding a decent turn rate. Below 3000 ft it can even outrun the A6M2 when using full power. Since it's a U.S. Navy fighter it is quite heavy for it's era so don't engage in climbing turns. Keep the fight flat, work in teams and dive out if needed.

== F4F-4 ==

The F4F-4 uses the same engine as the F4F-3 and comes with heavier armament but also added weight due to the extra guns, ammo and a new folding wing design, intended to save space on the carrier deck. Many pilots preferred the lighter F4F-3 version which could climb and turn better. That being said, for intercepting enemy bombers and strafing, the F4F-4 is the better choice.

== FM2 ==

The FM2 arrived later than the F4F's and used the stronger Wright R-1820-56 engine, designed for better performance below 10000 ft. The FM2, while being surpassed as a dogfighter by several contemporary era planes, was used succesfully in ww2 as a submarine and ship hunter and it's pilots held it in good regard. It is faster at lower altitudes and can carry heavier ordnance than the other Wildcats, while being only slightly heavier than the F4F-3.

==== THE DE HAVILLAND MOSQUITOS REHAUL - By Bollok ===

The Mosquitos or "Wooden Wonders" were built out of wood and proved to be of a superb design in ww2. Powered by the strong Merlin engines the Mosquitos had a high top speed and were often able to outrun enemy fighters, allowing them to get in, strike the target and get out unscathed. The Mosquito flightmodels were previously in a terrible state, with an abysmal wing efficiency of nearly 30%. The new Mosquito flightmodels are instead sleek, fast and agile for their size.

--= NFII =--

The NFII was a nightfighter with onboard radar equipment. It was fast and deadly with 4x 20 mm cannons as well as 4x .303 cal's in the nose, and powered by Merlin 23 engines. While turn fights should generally be avoided, this fighter now retains its energy well and is a fast bird that can boom n zoom in and out of dogfights. Just fight smart and be aware of being jumped from above.

--= Mosquito IV =--

The Mk IV has no armament, but is instead a very fast hit n run tactical bomber, and was using the same Merlin 23 engines as the NFII. It excels in smart bomb runs where it can get in and out before enemy fighters can chase it down.

==== THE AVRO LANCASTERS REHAUL - By Bollok ===

The Lancaster I and III have been fully rebuilt to real life data performance and reports. An important note is that the Lancaster can now stall and spin out in bombardier view if the pilot completely chops the throttle just to get extra seconds over target. A real airplane can not fly below its stall speed so remember to always maintain enough throttle to keep the speed in the safe zone. The Lancasters will stall at 110 mph IAS at 50000 lb, and 125 mph IAS at 65000 lb. The Lancasters could carry a very large payload for a ww2 bomber and the Lanc I used the Merlin XX engines while the Lanc III was upgraded with Merlin 28 engines. The defensive armament of .303 mg's is somewhat weak but still has a good bite if the enemy comes to close. The Avro Lancasters can dive at a high speed, for a bomber, and ww2 Lanc pilots regularly used this to their advantage to escape pursuing Luftwaffe fighters. These are the first heavy bombers remodeled by the new Flightmodel Team and hopefully we will soon finally not only have realistic fighters, but also bombers that fly as close to the real thing as possible.

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Fuel leak and consumption rate bugs fixed.

----- FL2049 UPDATE: QUALITY DESIGN FROM ITALY -----

By: Robert, Grumpy, Idunno and Bollok.

3D Art: Madcat and Iart7

All made possible by: Bcamel (creator of the program used to model the airplanes)

--= The Macchi series =--

Complete rehaul for all the Macchi flightmodels. See below for details.

--= Spitfire wing break issue =--

The root cause has finally been found to be in the elevator authority settings, allowing even small joystick flicks to spike the G's well past the breaking point at high speeds. The elevator authority curve vs. speed has now been set to more realistic levels. This fix applies to all Spitfires.

--= Yak-3 and Yak-9D =--

Further tweaks to handling (pitch drag), making the Yakovlevs more agile.

--= P-47D-22 =--

The armament loadout options menu when in tower has been fixed.

--= Minor power jump fixes =--

Engine power when using boost will no longer make a small jump between 80-81 mph IAS. This applies to the: Buffalos, Fokker D.XXI, I-16 and MiG-3.

----- THE MACCHI SERIES REHAUL -----

While the P-40 has been described as "A poor man's Spitfire", the Italian C.202 and C.205 could be described as "A rich man's Messerschmitt", especially since they were fielding license built German engines. After flight trials the Germans even considered to replace their Bf 109's with either the Italian Macchi, Fiat or Reggiane airplanes. They scrapped the idea though due to the Italian planes requiring nearly 15000 man-hours to produce, whilst the production of a Messerschmitt required less than 5000

man-hours. This was also why the Italians had difficulties supplying their frontline squadrons with enough of the newer fighter versions.

The Macchis all use the same wing design and are quite fast and agile interceptors. The main achilles heel of the Macchis is their quite weak armament, which wasn't solved until the C.205 had 2x20 mm cannons added. All in all they should be found to be very competitive fighters. Squadron leader D.H. Clarke was a ww2 P-40 pilot who got to test fly many planes from different countries during his career. This is what he had to say about the Macchis:

D.H. Clarke on flying a captured C.200 Saetta:

"My impression was, and still is, that she was as fast as a Hurricane I, and certainly more manoeuvrable. The take-off run was fantastically short after being used to our heavy P-40's. The handling qualities were finger-light under all conditions. I had some practice dogfights with Hurricane IIs, Kittyhawk III's and Spitfire V's and found I could turn inside all of them. Although they were faster - the Hurricane only just - the Spitfire was the only one which could outclimb the Macchi 200."

D.H. Clarke on the C.202 Fulgore:

"Sleek, supremely fast - the sight of their high, white-crossed fin would have struck fear into our hearts had the Italians pressed home their attacks. The odd pilot proved that the 202 was capable of mixing it in a dogfight - out-turning our P-40s with ease; but the majority would pull away effortlessly into a climbing roll or a roll off the top when things became at all hectic. There is nothing more exasperating, when you are caning fifty-four inches of boost out of an engine, than to see your enemy indulge in carefree aerobatics; but although we did our damndest to get near enough to shoot at them, we seldom succeeded. Their aircraft was superior to ours on all counts. No wonder we wanted to fly one."

--= C.200 Saetta =--

The Saetta (Arrow) fields a Fiat radial engine capable of 960 hp. The all around view is excellent, and it is a quite agile bird able to mix it with any early ww2 fighter. The C.200 carries 2x.50 cal machine guns which is at least decent for it's era.

--= C.202 sIII Folgore =--

The Folgore (Thunderbolt) has a licence built DB 601 engine like the Bf 109E. The C.202's superior aerodynamical design however allows it a higher top speed than the Messerschmitt. Fielding only 2x.50 cal it is quite under armed for the 1941-1942 era, often requiring the pilot to hit an enemy with several

bursts, and attacking bombers with it can be a daunting task. The C.202 is a very fast and agile plane though, and a dangerous opponent.

--= C.202 sVII Folgore =--

The sVII had two extra 7.7 mm machine guns added to the wings in order to deal with the weak firepower. While adding 306 lb extra weight, it does provide a small increase in lethality. The drawback is a decreased climb and turn rate. Opinions of the C.202 versions were split among the Italian pilots, with some preferring the sVII, while others preferred the more agile sIII version.

--= C.205 Veltro =--

The Veltro (Greyhound) is the pinnacle of the Macchis and entered service in February 1943. It fields a license built DB 605 engine like the Bf 109G's. The C.205 is faster than the Messerschmitt though due to it's sleeker airframe design. While the earlier Macchis were underarmed, the C.205 instead boasts 2x.50 cal's and 2x20 mm cannons. This plane is fast, agile, climbs well and can pack a good punch. The Veltro is in every aspect "A rich man's Messerschmitt". It should be very competitive in the mid/late era, and also able hold it's own against later era planes.

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Changes in Release version 4.30 R9 (09.18.17) fl2048

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----- FL2048 UPDATE: THE FINNISH/RUSSIAN WINTER WAR -----

By: Robert, Grumpy, Idunno, Bollok, Bcamel and Madcat (cockpit 3d art).

--= Brewster Buffalo series =--

Complete rehaul for all three Brewster flightmodels. See below for details.

--= Fokker D.XXI =--

Complete rehaul for the Fokker D.XXI flightmodel. See below for details.

--= I-16 Ishak =--

Complete rehaul for the I-16 Ishak flightmodel. See below for details.

--= MiG-3 =--

Complete rehaul for the MiG-3 flightmodel. See below for details.

--= All Yaks =--

Reduction of nose sensitivity.

--= All F4U's =--

Fixed incorrect pitch-down behaviour when using flaps position 2.

--= Spitfires =--

* Spit IXa: Fixed the machinegun sound to .303 cal, instead of .50 cal.

* Spit V's: Fixed the engine power fluctuation at 160 mph IAS.

* Fixed the wingbreak issue for all Spitfires. They now have a ~4 neg G tolerance.

--= All P-51's =--

Fixed inherited code error that had the engine placed somewhat to the left of the aircrafts centerline.

--= P-47D-25 =--

The -25 now has rocket loadouts available. The rockets are now also placed at the correct spots under the wing.

--= Revised BHP behaviour below 80 mph IAS =--

Boost engine percent will now scale correctly as air RAM increases, with no sudden fluctuation at 80 mph IAS. This fix applies to the:

Fw 190 series, P-51 series, Yak series.

==== BREWSTER BUFFALO SERIES REHAUL ====

"I remember asking Pappy Boyington about the Brewster Buffalo. I had no sooner finished saying the word 'Buffalo', when he slammed his beer can down on the table, and practically snarled, "It was a DOG!" (His emphasis). Then he slowly leaned back in his chair and after a moment quietly said, "But the

early models, before they weighed it all down with armorplate, radios and other ****, they were pretty sweet little ships. Not real fast, but the little ****s could turn and roll in a phonebooth. Oh yeah--sweet little ship; but some engineer went and ****ed it up." With that he reached for his beer and was silent again."

-- B-239 Brewster --

The B-239 was the export aircraft to the Finnish airforce, and was one of the early versions that Mr. Boyington loved. It was a very well designed lightweight fighter with a strong punch of 3x .50 cal and a single .303 cal. Since it was equipped with the same engine as a DC-3, rated at 1000 hp, it lacks in top speed but has nice all around vision, is fairly agile and can easily turn with a Spitfire. It has a very good dive speed, and the Brewsters were recorded at 518 mph IAS without damage. In the Finnish/Russian winter war these planes had a kill/loss ratio of a staggering 32:1, best of ww2, which partially must be credited to the superiorly trained Finnish pilots, but also thanks to this Brewster fighter. The Finns loved their B-239's "Pearl of the sky" and kept them as their frontline fighters until more modern Bf 109G-2's arrived.

-- F2A-3 Buffalo --

Mr. Boyington's statement is fairly true. The U.S. F2A-3 is a rather overburdened carrier fighter for the early era of ww2, and carries 240 US gal of fuel. While giving it a great range it also hampers it's performance. This Buffalo does however pack a heavy hit with 4x.50 cal, and has ammo to spare. With a 1200 hp engine it also has decent speed for it's era. The Buffalos have a somewhat undeserved reputation after their failure to fight the A6M Zeros at the outbreak of the Pacific war. This is in big part due to the Allied pilots having no idea what they were up against, and tried to turn fight with the Zeros. Had they instead used their superior dive speed and the later developed thach weave of the F4F's, then they would have been more successful. With good wingman tactics and putting the F2A-3's guns to use, this fighter can put up a strong fight. It is advised against dueling 1v1 against more nimble fighters though. Many Navy pilots regarded the Buffalo as slightly superior to the Wildcat due to it's better all around vision and maneuverability, while others preferred the Wildcat.

-- B-339 Buffalo Mk1 --

This is the British Navy/land version of the Buffalo. It has a lower top speed than the F2A-3 due to fielding a 1100 hp engine, but is lighter since it carries 480 lb less fuel. The weaker engine means it has the lowest climb rate of the Buffalo's though. All in all The B-339 and F2A-3 are quite decent Allied carrier fighters, while the B-239 is a very competitive land based early era warplane.

=== FOKKER D.XXI REHAUL ===

A dutch plane that scored a fine tally against the Luftwaffe at the outbreak of war. It did very well in several fights, but the Dutch pilot's were simply to outnumbered. Also in Finland the D.XXI had an impressive kill/loss ratio against early Russian airplanes. The Fokker D.XXI weighs only 4519 lb and has very thick wings. It is one of the very best turners in Warbirds. This however, coupled with non-retractable landing gear, takes a heavy toll on it's top speed. It is also a bit underarmed, only fielding 4x 7.7 mm MG's. A skilled enemy pilot will keep his speed against this plane, but if the D.XXI pilot can enter a furball or sucker an enemy into a knife-fight, then the Fokker is most probable to come out victorious.

==== I-16 ISHAK REHAUL ===

The Polikarpov I-16 Ishak (donkey) Type 24 fighter is a very small airplane at only 4215 lb and with a 1115 hp engine. It has a good power/weight ratio for early era fighters. It's stubby feature means larger drag, and the top speed is only slightly better than that of a B-239. The climb rate is decent, slightly hampered by the two bladed prop, but the all around vision is excellent, making it very easy to spot threats from behind. Like the Fokker D.XXI, this Russian plane only fields 4x 7.62 mm MG's and needs time on the six of a bandit to bring it down. It also lacks flaps, as the Russian pilots deemed them unnecessary. Luckily though the I-16 Ishak is very nimble and can easily roll with a Fw 190. The turn rate is good and almost that of a Zero. It is a fun plane to fly and can make a good account of itself in the hands of a skilled pilot.

==== MIG-3 REHAUL ===

The Mikojan-Gurevitj MiG-3 is in all aspects a high altitude energy fighter. It's a poor turner against more nimble planes, but is unmatched in top speed in the early era, especially up high. As with most early Russian planes it lacks in firepower. This somewhat hampers it's role as a hit-n-run fighter and one might need several passes to take a bandit down. If fighting with the MiG-3 at high altitude and keeping the speed up, enemy planes will have a very hard time catching it though, and a disciplined MiG-3 pilot can freely dictate the fight. As such it is a good choice as an early era high alt bomber escort. Avoid any low n' slow dogfights and fly it to it's strengths. Boom n Zoom is the way of the MiG.

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Changes in Release version 4.30 R9 (09.05.17) fl2047

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This updated addresses the issues the P-47's and Lavochkins had with taking off from short airfields. They will now be able to accelerate as normal at low speeds.

The update also contains some minor improvements to the Lavochkin handling, and recalculated dragco for the P-47 series flaps, which were of a single slotted type that causes less drag than plain or split type flaps.

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Changes in Release version 4.30 R8 (08.28.17) fl2046

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----- FL2046 UPDATE: FROM RUSSIA WITH LOVE -----

By Robert and Grumpy.

For detailed speed and climb charts please visit:

<http://bhlanding.iient.com/warbirdsforum/viewforum.php?f=8>

--= Lavochkin series =--

Complete rehaul for the Lavochkin flightmodels. See below for details.

--= Yak series =--

Complete rehaul for the Yakovlev flightmodels. See below for details.

--= Fw 190's =--

Climb rate reduced ~200 ft/min when using the MW50 injection boost (Bst2) for the Fw 190A-8, Fw 190F-8 and Fw 190D-9.

--= P-47's =--

Climb rate reduced for the P-47D's, now set at ~2250 ft/min at bst1 and ~3250 ft/min at bst2 (below 10000 ft). Also similiar climb rate reduction for the P-47C.

----- LAVOCHKIN SERIES REHAUL -----

The Lavochkins are at their best at altitudes below 7000 ft (2100 m), and as such should be quite competitive for the Warbirds arenas style of play. Their performance then quickly falls off with altitude but the second stage supercharger kicks in around 20000 ft, where the La's are actually effective fighters. It is advised against fighting above this altitude though. The ammo clip is short so disciplined bursts is recommended. They all have a very high stall speed and usually do best as energy fighters, but the Lavochkins are still very maneuverable though with a roll rate second only to the Fw 190. Their high max AoA also means that you initially can keep inside many enemies in a turn for a short period of time. The later La's have great low alt max speed and the climb rate is good. The ability to use WEP for 10 minutes comes in handy for any prolonged fights. Their terminal dive speed is quite low though, but is slightly improved with each version.

-- Lavochkin La5F --

Not the top, nor the worst fighter for it's era. The La5F however finally gave the Russian pilots a fighting chance against the previously far superior German fighters in 1942-1943. It could almost match the speed of the Fw 190 and was able to outturn it. The La5F has a quite decent top speed below 7000 ft and climbs well against contemporary fighters. It rolls great.

-- Lavochkin La5FN --

While the new engine only saw moderate improvement from the La5F, the La5FN was a big jump in development and saw significant aerodynamical improvements regarding drag, greatly enhancing it's top speed. This is a mean and lean fighter able to challenge any opposition of the same era. It has a top speed matching the FW 190A-8 at low altitude, rolls like a ballerina and climbs well.

-- Lavochkin La7 and La7-3 --

The best Lavochkin fighter. It uses the same engine as the La5FN, but has even better top speed due to design improvements, easily matching a P-51D at low altitude while also outturning it. The La7's also saw structural improvements that lowered it's total weight and strengthened the wings, increasing the terminal dive speed, climb rate and turning ability even further. The La7-3 version of the La7's is a marksman's plane, as it has three Berezin cannons instead of the two SHVak cannons. The Berezin cannon has a higher rate of fire, meaning that the La7 3 version packs a much stronger punch than the normal La 7 version, although it will run out of ammo in 1/3 the time.

==== YAKOVLEV SERIES REHAUL ====

Just like the Lavochkins, the Yak interceptors also arrived timely to enable the Russian pilots to finally step toe to toe with the Luftwaffe. These Russian birds excel at 13000 ft and below, and should usually not aim to fight above this altitude. They both have decent turn rates and while the stall speed is quite high, they are maneuverable fighters, especially the Yak-3.

-- Yak-9D --

The Yak-9D entered service in late 1942, and is a heavier Yak version with additional fuel tanks. This makes it the Russian choice for mid-alt escort missions while still being a decent dogfighter. The Yak-9D is a bit underarmed with a single 12.7 mm and a single 20mm cannon, but the top speed is fair for its era. It cannot hold a sustained turnfight with more nimble planes, but can still outturn a P-51.

-- Yak-3 --

This is the true fighter version of the Yakovlevs. The airframe is smaller and lighter than the Yak-9, and it's a very competitive plane for its era. The armament is improved by an additional 12.7 mm MG, and while being somewhat slower than the La5FN, the Yak-3 will outturn and outclimb it. It is very maneuverable but the high stall speed means that you should usually avoid low n' slow knife fighting though, and a good tactic is to retain the energy.

Approximate combat entry dates:

La5F: Second part of 1942

Yak-9: October 1942

La5FN: Spring/summer 1943

Yak-3: June 1944

La7: October 1944

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Changes in Release version 4.30 R5 (06.26.17) fl2045

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** NEW FM WORK BY robert, idunno and grumpy **

-- FW 190 SERIES COMPLETE REHAUL ==

The Fw190A-1, A-2, A-4, A-8, F-8 and D-9 have all been fully remodeled according to extensive research of historical data. They now turn better than before and should hit historical performance more accurately. See further down for more detailed info.

-- P-51 SERIES COMPLETE REHAUL ==

The A-36, Mustang Mk I, P-51B and P-51D have all been fully remodeled according to extensive research of historical data. The snappy stall issue has now been fully fixed and they should hit their historical performance very well. All Mustang versions now also follow the same law of physics. See further down for more detailed info.

-- P-47 SERIES COMPLETE REHAUL ==

The P-47C, P-47D-22 and P-47D-25 have all been fully remodeled according to extensive research of historical data. They are now properly gaining from having elliptical low induced drag wings and are no longer the E-bleed hogs they've been before. They actually retain their energy very well for being 13 000 lb beasts and are now great for high altitude fighting, dive bombing and can now properly outdive any opponent. See further down for more detailed info.

-- FLAPS REHAUL ==

42 flightmodels had extreme liftco numbers modeled to their flaps, with the same liftco value no matter the flaps angle. This lowered their stall speed by 13-20 mph even at combat flaps, which also resulted in an unrealistically enhanced turning performance. These flightmodels have now been retweaked to have a more realistic flaps performance with the liftco scaling with flaps angle. They will still certainly benefit from deploying combat flaps in a turn fight, although the effect is not as dramatic as before. Flaps wise they will now compete on the same terms and using the same laws of physics as all the other fighters. The flightmodels affected by this global change are:

Bf 109's, Bf 110's, Fokker DXXI, F4U's, F6F-5, Hawker Typhoon, Hurricane I and IIB, J2M's, Ki-43, Ki-44 Ki-61's, Ki-84, Macchi's, MiG-3, N1k1, P-38's, Sea Hurricane, Fw 190's, P-47's, P-51's.

-- Ki-43 ==

Weight upped to 5500 lb, up from 5085,8 lb

-- BF 109's ==

elevator trim 0.20, up from 0.15

Rudder trim 0.05, up from 0.04

aileron trim 0.07, up from 0.05

The Bf 109K's and Bf 109G-14 now have 10 minutes MW50 injection WEP time instead of 5 minutes. The total WEP available per sortie is 20 minutes.

-- ALL SPITFIRES --

Negative G limit increased to fix wing break issue. Was previously set to low.

-- F6F-5 --

Stall behaviour remodeled. Stall is no longer as harsh.

-- New engine sound and various engine/weapon sound fixes --

Fw 190 series, a36, P-51mk1

-- Fw 190'S FULL REMODELING --

In general the Fw 190's are potent boom n zoom fighters and not turn fighters since they have a very high stall speed of 110 mph IAS at 9420 lb. The Fw 190's have great all around pilot visibility and are at their best in the low-mid altitude range but have poor performance above 25 000 ft. They all have good speed for their respective eras and roll exceptionally well. A wise pilot makes good use of this. Be careful as the stall comes with little warning so it's dangerous to fly on the verge of stall (the Fw 190's didn't have washout for the wings). They can all use combat flaps below 250 mph IAS and the A-8, F-8 and D-9 has the Mw50 injection WEP option. While a P-51D is faster at most altitudes at WEP, it can only use it's WEP for a few minutes while the late Fw 190's can run their WEP for 10 minutes. This makes them great for prolonged fighting. Their heavy armament makes them suitable for attacking bomber formations.

FW 190A-1

The A-1 is the earliest version of the Fw 190's in Warbirds. It has weaker firepower and is somewhat slower than the A-2, but a bit lighter and as such turns tighter.

Fw 190A-2

An improved version of the A-1. A bit heavier but with a more powerful engine and 20 mm cannons.

Fw 190A-4

Similar to the A-2 but with the biggest difference that the A-4 can carry bombs and a droptank due to wingrack upgrades, while the earlier versions are restricted to guns only. The A-4 engine was supposed to be able to use the MW50 engine injection but logistical problems meant the Fw 190's didn't see this invention until the A-8 versions. As such the A-4 is restricted to normal WEP.

Fw 190A-8

A distinctively heavier variant of the Fw 190s with better armor. The A-8 can carry more ordnance than the A-4 due to an even further improved wing structure and also have the "Sturmbock" option. The A-8 can use the Mw50 injection. This greatly improves the War emergency power by nearly 200 BHP compared to the A-4 and allows it to be run for 10 minute stints due to the cooling effect of the Water/methanol injection. This Fw 190 version is the best for attacking bomber formations.

Fw 190F-8

The F-8 is similar to the A-8, but it has a weaker guns loadout and instead a better arsenal of ground attack options. It has the MW50 injection.

Fw 190D-9

The D-9 has an inline engine instead of a radial engine, and can also use the MW50 injection. This means it cannot sustain oil leaks as well as its radial engine fitted brothers, but instead has a top speed that clearly offsets any such disadvantage. The D-9 version is great for boom n zoom fighter tactics and can even outrun a Mustang below 5000 ft and between 14 000-16 000 ft.

--= p-51's FULL REMODELING =--

In general the P-51's are very fast hit n run fighters due to their laminar wings and great high speed aerodynamical design. The early P-51s are best at low/mid altitudes and has poor high altitude performance. The later versions excel as high altitude fighters/escorts and has great range. They can turn a few laps with other fighters at high speed but should avoid any low n slow turn fighting due to their laminar wings. The short military and WEP time limits means that you need to monitor your engine temperature and sometimes extend to cool down the engine before returning to the fray.

Mustang Mk1

This early Mustang is a British high speed interceptor at its best at mid altitudes. Few fighters of the same era can match its speed at this altitude range. Avoid fighting at higher altitudes.

A-36

The American version of the Mustang Mk1 is the fighter-bomber version of the early P-51's. It comes equipped with dive brakes and excels in its role as a tactical ground striker. It has greatly improved speed below 6000 ft which means it can outrun any fighter of the same era at sea level, but it suffers at mid-high altitudes.

P-51B

The P-51B has an improved roll rate compared to the earlier Mustangs and greatly increased high altitude performance. It can climb to 42 000+ ft. This plane has great range and excels as a high altitude interceptor/escort fighter.

P-51D

The best version of the P-51's in Warbirds. This Pony can use 72" WEP and is among the top fastest, if not the fastest fighter in the sim (depending on altitude). It is great at high altitudes and has improved firepower with 6x 0.50 cal MG's. Another important upgrade compared to the other Mustangs is it's bubble canopy which allows for a great 360° view.

-- P-47's FULL REMODELING --

These large Thunderbolts with radial engines are great planes for dive bombing and strafing with their 8x 0.50 cal's, but do not take them for low altitude fighters. Their low altitude top speed performance is quite mediocre for later war planes and when it comes to dogfighting they rather excel above 25 000 ft. Above this altitude they are superb interceptors/escorts/bomber formation attackers and they can climb to 42 000 ft just like the P-51's. While their turn rate is somewhat better than one would expect, they have a very large turning radius so avoid any low n slow business. The Jugs have elliptical wings and as such great energy retention for their weight so you can turn a bit without losing too much speed, then extend and repeat the boom n zooming. One of their best defensive tactics is that they can outdive other enemy propeller planes. Use this to your advantage when being jumped. The P-47's also roll fairly well at speeds below 300 mph.

P-47C

The early version of the Thunderbolts. It's a quite potent and fast plane for it's era but suffers from bad razorback rear vision. It is very well armed though and can tear enemy fighters and bombers apart alike with it's 8x .50 cal's. Just like it's late war counterparts it excels at high altitudes. This is especially true vs earlier era planes. The P-47C climb rate isn't great so keep it level in a fight.

P-47D-22

A better version of the P-47C. It has military power and can use Water injection WEP which greatly adds to the BHP the engine can produce. As with the P-47C, avoid low altitude fighting if possible.

P-47D-25

The best P-47 version in Warbirds. Very simliar to the P-47D-22 but carries 65 gal extra internal fuel and has a bubble canopy which allows for great all around pilot vision. This bird competes to be one of the best high altitude escort fighters/interceptors of the war for shorter bombing missions, as it's fuel consumption is to high to fit the "deep strikes into Berlin" like the P-51D can. In the Main Arena though the fuel range should be no problem.

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Changes in Release version 4.30 R1 (03.21.17) fl2039

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* New Terrains by JABO

Canyon

Channel 1944

Wasteland

* Terrain Changes by chunky

Crimea

3 - fixed issue with capture bug

205 - fixed issue with capture bug

213 - moved spawn points to more appropriate locations

262 - fixed issue with bounding boxes causing crashes and damage

Solomon

Fixed bug with Field 18 capture

* FL2039 CHANGES

ALL FM's

* Controlsurfaceperrate settings set to 60% of previous pitch and yaw numbers, roll has been untouched. This is made to smoothen the controls and reduce the nose bouncing when trying to aim. It will also reduce wing breaking somewhat.

* Tweaked Vortex numbers according to agreed values, based on (Max hp/full weight)x100. This affects yaw from torque.

* Tweaked Proprpm to 66% x military power rpm. This affects roll from torque.

* Rudderoffset removed from several FM's, now set to 0. 0000 as it should be. This was only experimental and should have been removed. This is what caused the P-40's (and other fighters) yaw to be so jumpy and erratic.

- * Manual rudder trim set to at least 0.20 if it was previously lower, unless other data proves otherwise.
- * Manual aileron trim set to at least 0.15 if it was previously lower, unless other data proves otherwise.
- * Tweaked various manual trim values due to changes in proprpm and vortex.
- * All boost stage info rewritten to be uniform (.ppm). Also temperature rise settings tweaked to be consistent with the HUD info. This was a complete clusterf*** before.

Bf 109G-6/RVI and Bf 109K-4/RIV

Added weight to the gondola versions, new data shows +215kg/+474lb extra weight for these.

http://kurfurst.org/Performance_tests/109G1-6_datasheet/109G_perftable_EN.html

Added rollweight to simulate gondola wing cannons

Reduced roll force to simulate gondola wing cannons

Total effect example: 98 vs 124 deg/sec at 250 mph IAS

All G-6's and K-4's: Sound change: machine guns now sound like 13 mm, not 7.92 mm.

P-51D

Noseheavymult set to -0.2, down from -1.2

MaxpitchAngle set to 24, down from 30. Due to stability issues.

P-38's

.ppc changed, P-38's will now lose pitch authority above 420 mph IAS.

.ppc altered, P-38's will now roll according to historical data.

F6F-5

Noseheavymult set to -0.3, down from -1.0

MaxpitchAngle set to 23, down from 25. Due to stability issues.

PitchDiv set to 17.5, up from 15.0 due to screen bounce issue.

P-47's

Noseheavymult set to 0.5 for all P-47's, was ranging from -2.0 to 1.0 depending on P-47.

MaxpitchAngle set to 24, down from 30. Due to stability issues.

Removed elevator offset, was constantly pitching heavily down.

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Changes in Release version 4.29 R5 (01.06.17) fl2038

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Flight Models

substantially revised

F5F-6

Hellcat

P51D

P47D- Blok 22

and Block 25

Spitfire Mk

1

Hurricane Mk

1B

These revised FMs

all utilise new wing profiles for a more accurate stall speed

and have been set to closely match historic

performance in level speeds / climb rates / sustained turn rates.

Flight Models

with minor revisions

Ki84-Ia –

changes to weight, speed tolerance, lift and drag, trims and

boost settings

Bf109K4 and

Bf109K4/RIV – changes to weight, fuel

capacity/consumption, propwash. Engine substantially

revised

I-16

Bf109F2

Changes to all

Flight Models

Removed

excessive rolling caused by rudder due to dihedral effect

New Plane Art from MadCat

h75,il6,p36,p40b,tbf1,tbf cockpit, f2a cockpit

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Changes in Release version 4.29 R5 (5.31.16) fl2037

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Corrections to:

Ki84, P51D, 109G14, Spit9e and Typhoon

Speed limit tolerance revised. Be careful diving fast now...parts will break.

New terrain "Channel 1944"

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Changes in Release version 4.29 R5 (4.14.16) fl2036

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New engines for 190A4 and A8

Spit XIV 150octane boost setting removed for upcoming S3 event. Will be reinstated

N1K1 weight increased to match historical data.

New V1 "Buzz Bomb" added as an AI for S3 and special events..

New ME-109G-14AM released.

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Changes in Release version 4.29 R5 (4.14.16) fl2035

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Spit9b renamed to Spit9a

Corrected roll rates 109F1/2

Some 109 boost levels corrected so higher level doesn't go under lower levels.
adjusted Inline engine oil leaks to ~3 min oil leak time.

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Changes in Release version 4.29 R5 (4.13.16)

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New features from M4 Tank added for compatibility

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Changes in Release version 4.29 R4 (4.5.16) fl2034

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New FM updates to:

P40B

Spit5 b/c

109s

added 4x50kg bombload to 109F models

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Changes in Release version 4.29 R4 (3.31.16) fl2033

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New FM updates to:

Me-109F1

Me-109F2

Me-109G6

Me-109G6/R6

SpitVb

Do-17

Updated I-16 3d model and cockpit
icons for P40/P39 changed to HAWK/COBRA

Changes in Release version 4.29 R4 (3.22.16)

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Crash bug when switching arenas fixed
New sounds for g-exceeded and over speed
New optional FM enhancements

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Changes in Release version 4.29 R2 (3.16.16)

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New FM Updates to:

Spit Mk1

SpitVc

Me-109F4

Me-109G2

Bugfix for P47D25 excessive yaw.
Guns on Hurri1 switched to one battery.
Loadouts for Lancs renamed to more conventional naming.
Code change to fix Lanc tailwheel breaking when spawning.

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Changes in Release version 4.28 R7 (2.24.16)

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Tweaks to Fall Gelb S3 FMs

NEW British Buffalo Mk1 Released

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Changes in Release version 4.28 R7 (2.18.16)

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New Russian I-16 Ishak and FM. Cockpit still getting finalized but usable.

New Hawk 75 plane with French and Finnish skins.

New Finnish Buffalo B239.

Minor tweaks to TBF and P36 cockpits.

FM adjustments to 109E, 110C, Hurr1, Wellington, P36.

quad SDK 20mm range decreased.

New AI Bomber formation. Using the "ladder" formation you will now get a historically correct "combat box". Your AI will now be more effective and able to bring more guns to bear on an attacker.

Terrain Changes by chunky

Ardennes

1. Moved all airfield GV spawn points off of main field by 1.8-2.1 miles.
2. Moved GV spawn points from several villages where GV battles tend to take place. This was done to reduce the spawn camping occurrences.
3. Added several new spawn point options to all airfields and several villages.
4. Added new base F83 just north of F29 along with a new bridge for GV battles.
5. Moved F27 closer to F5 and added bridge.

6. Moved several villages that were very close to large airfields to approx 4 miles to prevent quick closer.
7. Moved F29 across the gorge and added a bridge.
8. Added bridge between F7 and F31 to aid crossing by GV.

Crimea

1. Made all bridges drivable.
2. Changed several bridge locations to make them drivable.
3. Removed several bridges as they served zero purpose and could not be made drivable.
4. Added several bridges for GV event purposes.