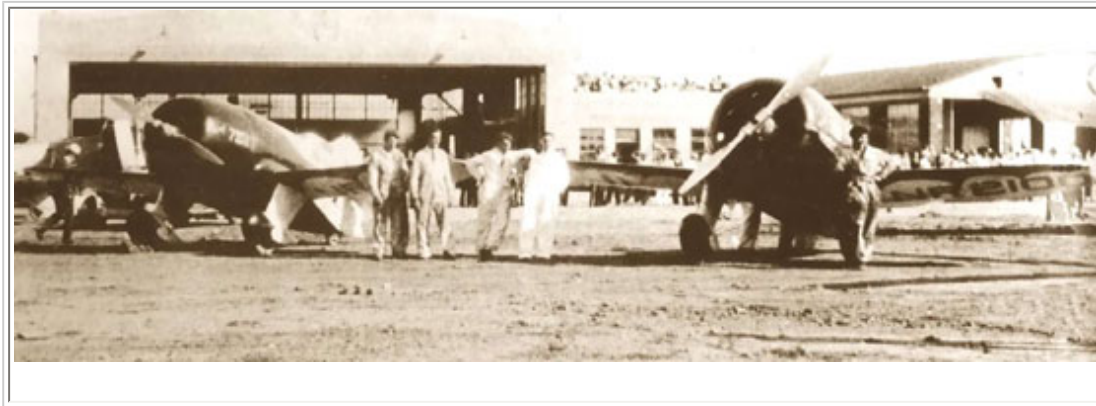


AVSIM Commercial Aircraft Review

AlphaSim GB Super Sportsters



Product Information

Publisher: [AlphaSim](#)

Description: Vintage Racing Aircraft.

Download Size:
45 MB (FSX); 65 MB (FS9)

Format:
Download

Simulation Type:
FS9 & FSX (SP1/SP2/Accel)

Reviewed by: [Gabriel Logan](#) AVSIM Contributing Reviewer - September 12, 2008

Introduction

“ That’s one nice aircraft you’ve got there!” exclaimed the Gee Bee Model Z’s test pilot in 1931. It marked the beginning of a story of excitement and controversy which would last for the next 75 years as flight engineers around the world, attempted to gain the edge in the design of performance aircraft. Dubbed by cynics: “The Flying Silo” and: “The Killer”, the Granville brothers (after whom the aircraft was named) pushed the limits of aerodynamics to leave a colorful legacy that would influence aircraft design for decades to come.

The Sportster R–1 and R–2 were, arguably, the most successful of all the Gee Bee models. Successors to the Model Z, they represented the optimal design for racing aircraft of their time and although after the retirement of the Sportsters,

further modifications were made to the design to improve performance and speed, none were really successful while some were even fatal. Pushing them to their limits, were a mixed-bag of pilots in terms of experience and innate skill and it was this – according to early supporters – that caused the fatalities rather than flawed design. In fact, modern-day flight engineers support this contention: inherently, the design of the Sportster models is seen as being both aerodynamically sound and satisfying many of the criteria demanded by modern high performance aircraft.

The Granvilles and their supporters always maintained that the machines were not deficient from a design perspective and were 'perfectly safe' providing they were flown by expert pilots who were aware of the aircraft's limitations and nuances. In other words: the GB offers a real challenge to any pilot who dares to climb into the cockpit!

History and Design

The first Gee Bee, the Model Z powered by the 535 HP Pratt & Whitney, was engineered by Bob Hall and built by the Granville Brothers. Entered into numerous races during 1931, the 'City of Springfield' – flown by Lowell Bayles an experienced racing pilot – won every race, including the Shell Speed Dash at a speed of 267mph and the Thompson Trophy Race with a speed of 236mph. Sadly, Bayles would later be killed in a during an attempt at the world's speed record.

In a move that proved fatal, a larger engine of almost 800 HP was fitted to a Model Z, with a view to achieving success in their impending attempt at the land speed record. On December 5th 1931 at Detroit, the Gee Bee crashed killing Bayles after the right wing came away from the fuselage at just 150ft AGL: the reputation of these aircraft as 'killers' had begun. However, although the Gee Bees came to be regarded as totally treacherous aircraft, it was, arguably unfair as the crashes were more often the result of inadequately prepared pilots attempting to fly a powerful and sensitive aircraft.

So, how does the Sportster R-1 and R-2 fit into this 'potted' history? After the fatal incident involving the Model Z, the brothers immediately set to work on changing the design in a way that would increase both its strength and general stability, but still push the aircraft to the limits. Recruiting Howell Miller – a graduate in aeronautical engineering of the University of New York – as Assistant Chief Engineer, the brothers concentrated on a new concept that involved the use of a 'teardrop' fuselage together with shorter and broader wings. Miller supervised a series wind-tunnel tests predicting that the Granvilles' intuitive design was going to be fast. Both Gee Bees were built for the 1932 air racing season: Jimmy Doolittle flew the R-1 to a new world's land plane speed record of 296 mph and subsequently took the honors in the Thompson pylon race at 252.7 mph. This was possibly the high-point of Gee Bee history for only tragedy would follow for the rest of the decade, as one Gee Bee crash followed another, usually as a result of modifying the original design – a design that was already pushing the limits of physics and engineering.

One of the most significant modifications seen in the 1932 Sportsters was the switch to a constant-speed propeller. As one of the brothers explains in the July 1932 edition of Aero digest: "...experience with racing craft in the past taught us that a propeller efficient at high speed is extremely poor on the get-away and take-off, which counts seriously in a race from a standing start [...] with this in mind we selected a Smith controllable-pitch propeller as the ideal installation which would give us the desired take-off and still hold the motor down to the proper rpm at the proper speed." He continues "... the [fuselage] sections, to about 30% of the length, were true circles. From this point aft, the sections became ellipses, with the major axis vertical; the disposition of the cockpit near the tail necessitated this. We knew from other data that by careful attention to the particular shape of the fuselage it was possible to get a lower drag coefficient per square foot of area with consequently low drag for the entire fuselage."

At this point, Granville supports his claim that his Gee Bee's made sense aerodynamically, by presenting a variety of mathematical equations – equations that I can assure you...look very pretty!

As for the potentially sensitive behavior of the Gee Bee, Granville explains that: "...the control stick was unusually long and geared down in such a way as to make a small movement of the control surfaces with a large movement of the stick. The rudder of the racer was somewhat different [...] in construction and design. It was merely a movable end on the streamline fuselage. [We knew] that a thin rudder acting between the converging streams of air on each side of the fuselage was too sensitive at high speeds if of sufficient size for control at stalling speed. The rudder is nearly 12 inches thick at the hinge-line and the sides of the rudder are therefore nearly parallel to the flow of the air stream on each side. This makes the rudder action soft at high speeds while of sufficient area for complete control at stalling speeds. Sensitivity was more pronounced at stalling speeds than at high speeds."

It is noteworthy that a fatal accident, involving a later variant of the Sportster, resulted from an attempt to side-slip (intended to bleed airspeed) below 120mph. You have been warned!

Features (per Alphasim)

- Full FSX model with all FSX features (bump mapping, self-shadowing, bloom etc.)
- TWO model variations (R-1 / R-2) with their own unique handling characteristics
- FSX model includes VC self-shadowing (requires FSX SP2, Vista and DirectX10 video card)
- FSX model includes 2048-pixel textures
- HIGHLY authentic virtual cockpit with animations and mousable controls
- All VC gauges are 3D models with compete 3D working parts such as needles, flags etc
- All gauges are fully mousable with switch parts all working correctly
- 'RealGauge' Technology provides smooth operation, high FPS and extremely crisp appearance
- All gauges have custom night-time illumination
- Extremely authentic flight dynamics with separate flight model files for each variant
- High quality sounds by TSS
- Detailed and illustrated 27-page PDF manual
- Realistic pilot figure with user-input animations

Installation and Documentation

At a cost of \$40 NZD, the FSX download (currently v1.3) is a compact 45MB with an optional 'Paint Kit' available at 102MB; the FS2004 version comes complete with the paint kit at 65MB. The servers are pretty quick, taking a little over 10 minutes to download all three files on a 6MB connection. Extra liveries, created by users, are available through either the Alphasim forums or in the AVSIM file library. It's certainly worth the effort as they are very impressive.

Providing a repaint kit (requiring Photoshop) is becoming fashionable and it's good to see, but bear in mind that any liveries you create will be entirely fictional, as even the one replica currently flying still uses the original red and white paint scheme.



Repaints can look superb

Gizmo's flaming Chop Shop

Stunning looks and flies well too

While adequate, the documentation would benefit from a little more detail, particularly in relation to the Gee Bees' background. With only a few lines devoted to this, I can't help feeling that a more comprehensive coverage of the history and allowing prospective buyers to download the manual would only stimulate interest. In addition, performance specifications and keyboard data are provided only for the R-1, leaving you to figure out the differences between the two flight models for yourself.

A further gripe, although relatively minor, relates to the reference data: performance specifications tend to be expressed in MPH in some sections but in KIAS elsewhere. I found this a little annoying as it necessitated digging out my dusty calculator as well as indulging in a little editing of the HTML files needed for the keyboard data.

I appreciate that 'back in the day' MPH was an oft-used measure and that air races had to use it (effectively measuring ground speed) but ideally all references to flight performance, whether it be rotation speed, cruising speed or V_{so}, should have been converted to knots and used consistently throughout.

Finally, the latest (v1.3) download, will not allow you to actually access the R-1 variant. However, researching the forums, I was able to establish that the aircraft.cfg file needed amending, something Alphasim had promised to correct some months ago. A little sloppy yes, but hopefully they will eventually sort this out.

This review was compiled using the FSX version with SP2 installed onto Windows XP (SP2).

Replicas and RC Models

The Gee Bee is an extremely popular model for radio-controlled flying enthusiasts as evidenced by the plethora of websites and YouTube videos devoted to it.

Two flying replicas of the Model Z have been built. In 1978, a replica Model Z (albeit with a longer fuselage and less powerful engine) was constructed by Bill Turner and subsequently purchased by the Disney Corporation to use in the movie: "The Rocketeer." It now resides at the Santa Monica Museum of Flying. A second replica was later built and is currently on display at the Fantasy of Flight Museum in Polk City, Florida.

In 1991, Delmar Benjamin and Steve Wolfe built an R-2 replica and proceeded to demonstrate the degree to which the Gee Bee is capable of complex aerobatics at high speed in the hands of a pilot who understands its characteristics. Delmar – currently having more hours in the Gee Bee cockpit than any other pilot in history – feels he has completely vindicated the basic Gee Bee design, which he believes rendered a great service to aviation history.

All that remains to be seen is whether you can step up to the mark and prove yourself a worthy Gee Bee pilot!

External Model and Virtual Cockpit

Both models in the standard package, feature the original red and white liveries together with their registration numbers painted onto both the upper and underside of the wing – a feature often found lacking. The high attention to detail is immediately evident with everything from individual rivets to the exquisite engine detail being modeled in 3D. With highly-reflective and high-poly textures, the external models are simply excellent! Performance too is startling, especially when you consider how many polygons are actually drawn at typical zoom levels, with typical frame rates around 80-

85% those of default GA aircraft.

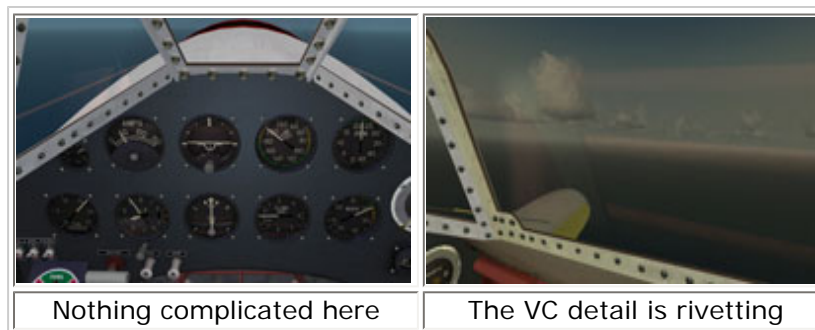


As I don't use Vista, I was unable to test the DirectX10 features, but the advertised external self-shadowing and bump-mapping features were certainly present and correct in XP, together with an animated pilot and a discernible compression of the tail-wheel upon landing.

Some of the downloadable liveries are superb and worthy of note. All have been created using the paint kits supplied and posted by forum users in the Alphasim Cafe Forum. The 'flaming 2012' variant and the famous yellow/black (Model Z) liveries shown here were painted by 'Gizm0.' The 'Breitling' and 'Red Bull' repaints were created by Pierre Lheureux. All should be available to download from the AVSIM file library. Although completely fictitious, these paint jobs show just what's possible with a little know-how and a lot of care and imagination. Admiring these modern-day liveries, one cannot help but wonder if – given today's technology and materials – they may have given the current Extra 300s etc. a run for their money!



Although there is a 2D panel, Alphasim admit that, although included, it's not really designed to be used. Being no more than the upper canopy and the top-fifth or so of the panel, it could have been omitted completely, at least from the FSX version. Many developers are starting to do this for FSX and, it makes sense. I found it rather confusing at first, thinking that I had a graphical problem. Anyhow, the VC is perfectly capable of standing on its own and in terms of performance, boasts frame rates only 10-15% lower than those of default GA aircraft.



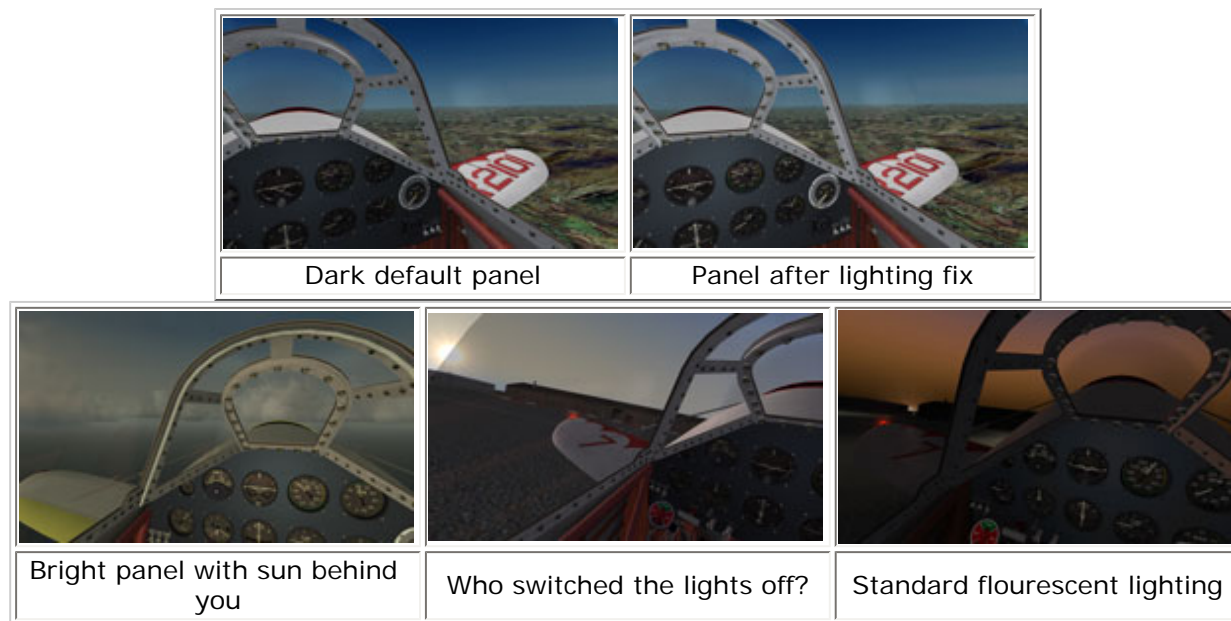
Lighting is authentic: unfortunately this means virtually, non-existent. Originally, the gauges were painted with fluorescent paint and apart from a tiny bit of added light to the windshield struts/rivets, that's exactly what you get. Although the R-1 had no lighting at all, the R-2 was equipped with fixed red and green navigation lights, yet the cockpit remained a very dark place to be.

The cockpit was very small and had thick toughened glass, so I guess it was understandable. However, for those of us that welcome a little 'artistic license' on occasion, the chaps on the Alphasim forums were quick to devise a simple workaround: by adding a line of code to the 'aircraft.cfg' file, a basic level of default FSX panel lighting can be introduced. Be warned though: if you choose to go down this route, the intended night lighting effect – which is actually very pleasant – is lost. Switching on the panel light will only give you the default floodlighting, whereas switching off the lights will cocoon you in a very snug blanket of utter darkness.



Unfortunately, should you choose not to amend the lighting arrangements, keeping everything authentic, the seemingly ubiquitous 'FSX lighting problem' rears its ugly head. For those readers who have not encountered this phenomenon – or those spoiled by the likes of RealAir products – put simply, the lights don't come on until FSX deems it 'dark enough' in whichever part of the world you happen to be in. As you can see from the screenshots, the panel is pretty much invisible as dusk (or dawn) encroaches, until the FSX engine 'allows' the lights to come on. At this point, your patience is then rewarded with – what I would imagine is – a very authentic set of fluorescent gauges.

Now, while many developers blame FSX for this problem, others manage to overcome it. As far as I can tell, it depends on the methodology employed to create the gauges. As such...you pay your money, you take your choice. Having said this, Alphasim are certainly not alone in allowing FSX to dictate lighting – far from it – and I dare say that tweaking your video card (gamma, contrast etc.) may well improve matters. But to be honest, having to adjust my core system settings every time I switch between rides, can become a little annoying.



Flight Model and Sound

TSS (Turbine Sound Studios) was recruited by Alphasim to create the sound package – and, it rocks! Sound is often overlooked by developers, yet I feel that for these aircraft, the throaty engine sounds really are the icing on the cake. Moreover, the subtle yet discernible changes in tone provide an additional and welcome source of information as to the aircraft's performance. Whether you're leaning the mixture or searching for the optimal propeller pitch, the sound set really does provide extra feedback to the virtual pilot.

Both models correctly depict the original fuel tank configurations: the R-1 had one tank holding 320 gallons serving an engine super-charged to 800HP. This was enough to take you 925 miles at a cruising speed of some 220 KIAS, or 630 miles at full throttle and 260 KIAS. The R-2 with its 535HP engine (inherited from the Model Z), had two central tanks boasting (a combined) 320 gallons. The R-2 was also slightly more aerodynamic and together with a less powerful, less fuel-hungry engine, represented a strategy designed to increase the range between fuel stops on long races, resulting in a faster, overall speed.

For the purposes of testing the flight model, both aircraft were loaded with just 50 gallons of fuel (the typical racing load) and the R-2 had a few extra pounds added to the payload, bringing both to a takeoff weight of 2,462 lbs. Although the R-2 was not designed to compete in short races, this would at least allow a direct comparison of the two models in terms of performance.

Unlike the Model Z, the Sportsters enjoyed a variable-pitch propeller. Unfortunately, although the manual refers to engine temperature, no such gauges are found in the VC. Whether the original did have an EGT gauge, I don't know, but I would find it surprising if it didn't given that it was designed for long-distance racing and that the earlier Model Z was fitted with one. Anyway, the only way to assess mixture levels is by its affect on RPM and happily this is well modeled and seems to work just fine, even if it may be a little crude.

To test basic performance through the climb phase, I took each variant up to 20,000ft. I then restarted the flight to take

a look at other elements such as acrobatics and maximum speed at altitudes around 1,000-5,000ft AGL. Finally, I set up an approach some 10-15 miles from the airfield at around 4,000ft, to see whether landing would live up to expectations. All flying was carried out with realism settings set to maximum, although for the comparison of the initial climb to 20,000ft the rudder and mixture were set to 'auto' to ensure consistency as well as minimizing bias as a result of pilot error.



If you've flown any of the WWII aircraft available for FSX or FS2004, you will be familiar with powerful taildraggers: yes, they're a pain to taxi and an even bigger one to land. In our case, the sheer power under the hood creates an added complexity: high levels of torque. Rolling out in the R-1, hefty rudder input was needed as she accelerated to a takeoff speed of some 80 KIAS. The tail rose on its own and as expected and left the ground with no further input from myself at around 95KIAS. WARNING: the rudder on the Gee Bee is 12 inches wide at the pivot point and care should be taken if you intend to control it manually: without pedals, you will find it extremely sensitive. Moreover, the flying guide suggests that you gradually advance the throttle until the tail has lifted, before opening her up. I strongly recommend following this advice or at least disabling 'Collision Detection' – unless you enjoy resetting your flights on a regular basis!

Once into the climb phase, the R-1 was easily trimmed to establish a smooth climb-rate close to the advertised 6,000fpm at 32.5(MP) and 2,200 RPM. I was able to maintain this climb rate all the way to 10,000 feet whilst maintaining a healthy 140-160 KIAS. (Unfortunately, a trim wheel does seem to be missing from the cockpit, unless it is well hidden but this is a minor irritation.) Importantly, the R-2 performs less well: climbing at 4,000fpm at 120 KIAS and 32.5(MP).

However, it still had plenty of absolute power available, as opening the throttle fully, provided a similar 6,000fpm climb rate at around 150 KIAS with 45(MP). Note: the engine in both variants has a very narrow RPM tolerance and ignoring this provokes a definite grumbling from the engine, nicely demonstrating another element of the impressive TSS sound set.

Climbing beyond 10,000ft, manifold pressure and airspeed started to fall off requiring frequent increases to the throttle setting along with a reduction in RPM to maintain thrust. Reducing the climb rate to 4,500fpm, I settled for 30(MP) and 2,000 RPM yet still held a respectable 120 KIAS. Breaking 15,000ft, everything started to slow down, but at 20,000ft I was still climbing faster than a Cessna 172 manages at sea level. It wasn't until 24,000ft that she finally gave up, leveling-out at around 100 KIAS which represented a ground speed of some 140mph. Not bad for an aircraft designed 75 years ago, crafted from wood and a lot of optimism!

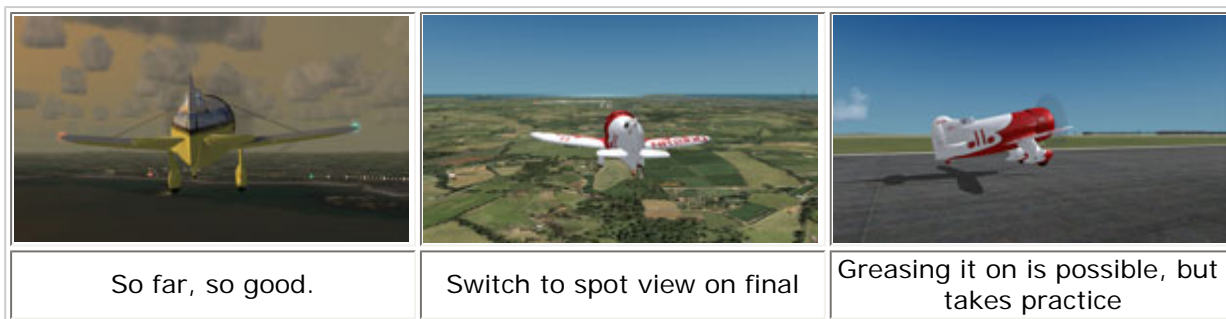
Remember that both aircraft were fueled with only 50 gallons. Importantly, with a full load, the climb rates of both aircraft were dramatically reduced. Not only was I delighted to see this being modeled accurately, but it made me think about just how important fuel strategies in 1930's racing were: just as important as they are today in high-performance

race car driving. It also became clear, why they designed the R-2 the way they did.

Having refueled and quickly climbed to find some empty acrobatic airspace at around 5000ft AGL, I attained maximum speeds of 260 KIAS in the R-1 (just as advertised) and 230 KIAS in the R-2, which although I'm no flight engineer, seemed more than reasonable. Performing acrobatics in the Gee Bee, presented no problems. In fact rolling-out was a lot easier and more intuitive, than most of the fighter aircraft I've played with and overall I felt a lot more in control. Whether this stability is realistic or not, again it's hard to say. But, ultimately it's fun and that's important.

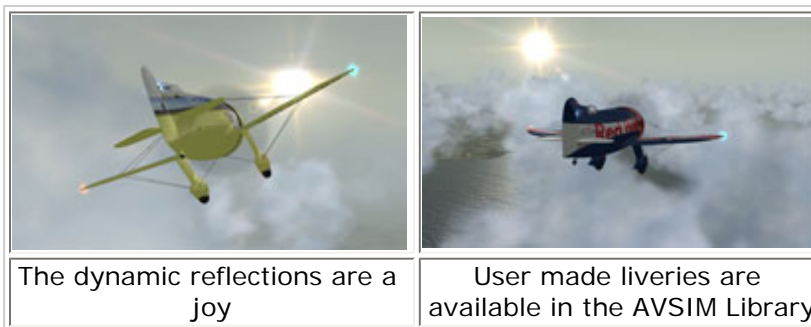
So, up to this point, both aircraft appeared to react in a predictable and realistic manner in accordance with the published specifications, although it should be borne in mind that the climb rates and maximum speeds do refer to racing configuration – i.e. low fuel loads. Although only the R-1 figures are provided in the documentation, the R-2 acts as you would expect from a relatively under-powered, yet more streamlined, design: full marks to Alphasim.

Coming in to land, I lined up an approach to Dublin, Ireland from around 15 miles out. Flying straight-and-level at around 4,000ft, I had to use a combination of MP and pitch changes to maintain a steady descent. It took a while to get the speed down, but once there I had no further problems and managed to follow the PAPI lights and grease a 3-pointer on the numbers at around 80 KIAS. Okay...so it took a few attempts...well over a dozen...to be honest. But I eventually managed it, even though I did need to utilize an external spot view! It will bounce if you hit the pavement hard and it behaves like any other tail-dragger, so you have the choice of a wheeled landing (front-two only) or a 3-pointer – with or without a stall, thrown-in for good measure. You certainly can't say this product doesn't provide lasting appeal.



Interestingly, judging by the few films I've seen of actual Gee Bees flying and landing, the pilots did appear to use a curved approach so that they could actually see the threshold up to the very last minute. Now, I'm not sure that the controller at Dublin would be happy with this type of approach, so if I want to perfect my 'in-cockpit' landing, I'll have to stick to my local VFR airfield in North Wales!

On a serious note, although the Gee Bee is potentially a powerful and demanding aircraft, particularly if there's a lot of wind – I'll let you explore that for yourself – within just a couple of hours you will have the measure it and wonder what all the fuss was about. Of course, landing – especially from the VC – will take a little more perseverance and as for cross-winds...well, you're on your own now!



The dynamic reflections are a joy

User made liveries are available in the AVSIM Library

Conclusion

With another imaginative choice for what is a recent foray into the arena of civilian aircraft, Alphasim have produced a more than decent aircraft that is both fun and challenging to fly. It flies as it should and although you can be up-and-running in minutes, it will take a while to master – especially the landing phase!

The high-poly external model is extremely impressive and while there are a few niggles, the VC is, on the whole, more than acceptable with smooth gauges, pleasant night-lighting and attention to detail.

With a more comprehensive section in the documentation, relating in particular to the colorful history of the Gee Bee, and arguably a brighter cockpit, this product would have been up there with the best.

As it stands, the Gee Bee is still a high-quality add-on that certainly doesn't disappoint and is well worth a purchase if you are a GA fan or simply have an interest in aviation history.

Being a fan of their Rutan 61 Long EZ, I for one, welcome Alphasim's entry into the civilian aircraft add-on market and look forward with interest to its future projects.

Test System

Quad Q6600 (G0 stepping) @ 3.40 GHz
 Radeon HD 4870 (512MB, DDR5)
 Gigabyte P35C DS3R motherboard
 4GB Corsair XMS2 (PC-6400 DDR2) @ 850 MHz
 Samsung HD501 LJ (500GB, SATAII, 7200rpm, 16MB Cache)
 Antec P180 Case / Antec Truepower Trio (650W) PSU
 Samsung 226BW 22" (1680x1050, 2ms/3000:1)
 Windows XP Professional (SP2) with FSX Deluxe (SP2)

What I Like About The GB Super Sportster

- Flies 'by the numbers'.
- High-polygon model looks impressive and importantly is: 'performance-friendly'.
- Well-rendered VC with smooth, clear gauges.
- High attention to detail both inside and out.
- Nice use of subtle and authentic lighting.

What I Don't Like About The GB Super Sportster

- Manual would benefit from a little more about the history and design of the Gee Bee – many will be unaware of it.
- Flying guide is lacking in a few areas, although nothing too serious.
- Some may find the lack of a full 2D panel, somewhat irksome.
- Succumbs to the inherent FSX lighting limitations.

Printing

If you wish to print this review or read it offline at your leisure, right click on the link below, and select "save as"

[GB Super Sportster](#)

(adobe acrobat required)

Comments?

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