Beta Release V1.6

ZanTar-Cheetah
Transportation Technologies Ltd.
Dædalus B-52 Catamaran

Test Flight – 22 April, 2022 French Guyana

Required Addons

Boeing X-37B (by liber)
http://www.orbithangar.com/searchid.php?ID=5165

Spacecraft3 (by Vinka)
http://users.swing.be/vinka/

(For Equatorial launch scenarios)

Cayenne Rochambeau Airport (by Papyref and Jacquesmomo
http://www.orbiterfrancophone.com/index.php?disp=addons&id=89

Velcro Scenarios :

Velcro Rockets v1.1 (by Sputnik)
http://www.orbithangar.com/searchid.php?ID=3388

ReleaseMe MFD (by Face)
(included in package)

Recommended addons :

Kourou-CSG-ELA (by Papyref, Mustard, Jacquesmomo)
http://www.orbiterfrancophone.com/index.php?disp=addons&id=91&lang=en

Kourou-CSG-ELS (by Papyref, and Jacquesmomo)
http://www.orbiterfrancophone.com/index.php?disp=addons&id=90&lang=en

High Rez French Guyana (by Jacquesmomo)
http://www.orbiterfrancophone.com/index.php?disp=addons&id=92

Universal Autopilots 0.3.1 (by Artlav)
http://www.orbithangar.com/searchid.php?ID=5269

ZTC-Dædalus Catamaran

Made from salvaged Douglas B-52's purchased from the boneyards in Arizona, the Dædalus was designed specifically as an aerial platform to launch small but useful payloads into LEO. When ZTC Ltd. came into possession first of a retired Chinese Lucky Dragon and immediately after of a retired USAF Boeing X-37B, the B-52 catamaran left its conceptual phase and became a fleet of two.

While the original outer wings are basically the same as the B-52 G and H series, titanium and carbon-composites have replaced the originals allowing both the addition of GEnx 2B67 engines, and the structural integrity required for lifting such heavy payloads.

Original test flights and orbital insertion of components of what would become the ZTC Ananke Cislunar Tether-Sling began in the Spring of 2022. The tether-sling network was completed shortly before 2029.

Thanks

Like the characters in the novel that this is a scene study for, I've tried to reuse and recycle pre-existing systems. The original mesh work for the B-52 is the work of Kev33 whose airplanes continue to be a mainstay for Orbiter though he's not been seen for quite some time. In the unlikely event you ever encounter this Kev – cheers ! I really enjoyed cutting up and reverse engineering your work here. The included 747 sound is from another of his addons.

The Castor 120, Castor 4B, and Star48B use the meshes from Sputnik's Velcro Rockets (STS107's work) – as the novel has SRBs become available via another nuclear arms reduction treaty (2015), having ready-made first stage Peacekeeper engines was actually more than I'd hoped for.

Spacecraft3 calculations are based on my research using multiple sources, including PDF's from manufacturers, NASA, and Encyclopedia Astronautica.

For sending me his original Anim8or files on the Boeing X-37 and motivating me to create the Dædalus a extra special thanks to liber. Thanks to Loru for early inspiration and dV help, and getting me to face the project's limitations early on. Sure wish the Prometheus could work with this platform, but it's just too large. Special thanks to Sputnik, as well for timely email response and all his help with Velcro Rockets. Thanks to the Orbiter Community at large for maintaining a demand for such an amazing spaceflight simulator.

Use

Note: See Scenario descriptions for instructions as well.

(Created in Orbiter 2006 and tested in 2010)

Spacecraft3 scenarios:

In the novel which inspired this "scene study," there's a huge element of cowboyism in terms of approach. The SC3 scenarios reflect this as the launch platform is heavy and sluggish. The ZTC motto is "quick, dirty, and dangerous" yet they've had no problem recruiting potential pilots for both the Dædalus and Icarus still in the workshop.

It's recommended to use the Rochambeau scenarios, as the platform has always been designed for launches near the Equator. Use of Artlav's Universal Auto Pilots is recommended as well for keeping the Dædalus on course and at altitude for launch.

Steps –

1. – Take the Dædalus to between 15.24 - 18.29 km at a 90 deg. heading maintaining velocity between 268 – 290 m/s. Don't forget to press "G" and raise the gear

after takeoff. Please note that the engine configuration for the Dædalus is excessive and care should be taken to keep the speed below 290 m/s.

2. When nearing altitude, rotate the Dædalus into a +30 to +40 deg. pitch.

3. Press "J" to jettison the rocket platform.

4. Hold "Ctrl" and "+" until engines are fully engaged.

5. Rotate pitch (this will be slow, but persevere until the nose is pointing to 40 deg.)

6. When Stage1 exhausts fuel supply, press "J" to jettison. Manually increase main thruster setting. Rotate pitch down to Level Horizon if over 40 km.

7. Repeat jettison and increase main thruster setting with 3rd (final) stage. Note: The Iktope tether-sling payload rockets require 3 jettisons to remove all fairing.

8. Use the X-37B's engine to increase velocity to orbital speeds and circularize orbit.

See liber's X-37B documentation for solar panel and airbrakes.

Velcro Scenario

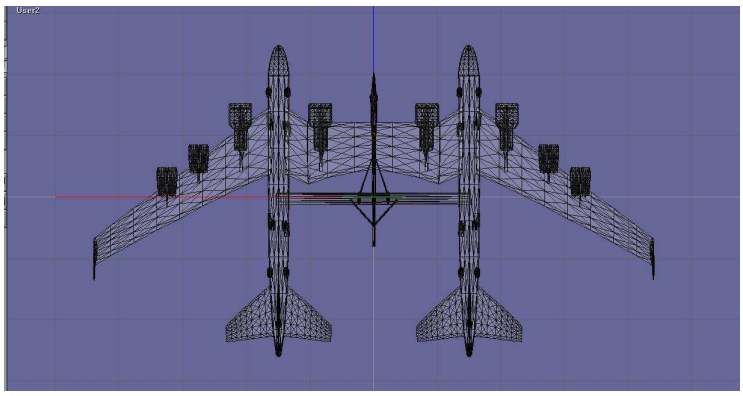
(note: Sputnik's pointed me to a way of using Velcro Rocket engines as payloads instead of attachments as are currently used. I will return to this in subsequent releases).

Currently using Dædalus's attachment point instead of payload. The Dædalus's engine definitions have been turned down to reflect lack of payload influence.

Install Face's "Release MFD" and activate in modules before using Velcro scenarios.

At launch altitude, use F3 to switch to Stage1 and use Release MFD to jettison. Velcro Rockets autopilot will take you nearly to orbit, though it's a bit more fun to do so manually.

Specifications



Original B-52H

Length 160.92 ft (49.05 m)
Wingspan 185.00 ft (56.39 m)
Height 40.67 ft (12.40 m)
Wing Area 4,000 ft² (371.6 m²)
Empty weight 195,000 lb (88,450 kg)
Normal Takeoff 265,000 lb (120,000 kg)
Max Takeoff (B-52G/H) 488,000 lb (219,600 kg)
Fuel Capacity 47,975 U.S. gal (39,948 imp gal; 181,610 L)
Max Payload 70,000 lb (31,500 kg)

Dædalus Catamaran

Length 160.92 ft (49.05 m)
Wingspan 288.71 ft (88 m)
Height 46 ft (14.02 m)
Wing Area 8,000 ft² (743.2 m²)
Empty weight 352,740 lb (160,000 kg)
Normal Takeoff 536,274 lb (243,250 kg)
Max Takeoff 992,080 lb (450,000 kg)
Fuel Capacity 47,975 U.S. gal (39,948 imp gal; 181,610 L)
Max Payload 100,000 lb (45,360 kg)

Maximum speed 560 kt (650 mph, 1,047 km/h)
Service ceiling 50,000 ft (15,000 km)
Absolute ceiling 68,000 ft (20.73 km)
Rate of climb 6,270 ft/min (31.85 m/s)
Maximum engine thrust 179.2 kN – (8 refurbished Pratt & Whitney TF33-P-3/103 turbofans + 4 GEnx-2B67)

Please note that the fuel capacity of the Dædalus has been effectively halved and should be adjusted on a mission to mission basis. The amount of fuel carried should be kept to an absolute minimum in order to remain below the maximum takeoff weight. But care should also be taken that enough fuel remains after launch to allow the Dædalus to return to base.

Boeing X-37B Conversion

ZTC is currently converting their small fleet of used X-37B's procured from the USAF as part of the current US Arms Reduction Domestic Agreement into 2 and 3 crew manned micro-shuttles. Early tests use X-37B drones with increased fuel capacity and hybrid rocket motors developed in Brazil in the last decade. In typical ZTC style, life support systems being added to the converted manned micro-shuttles are taken from Italian and Chinese Midget Submarines and are anticipated to support of crew of two for up to 120 hours.

Micro-Shuttle and Iktope Cargo Launch Platforms

Variant 1 (tether-reels):
First stage – Castor 120 core with 6 Castor 4B boosters.
Second stage – Castor 120.
Third stage – ZTC hybrid engine made from Chariot and Black Arrow components. (H202/Kerosene (w/paraffin & Al)

Payload – Tether-reels with 20 km of cable in each (x4) - 453.5 kg (x4).
- Titanium and aluminum trusses for construction materials – 1000 kg.

Length - 36.53 m.
Weight – 192,046.36 kg.

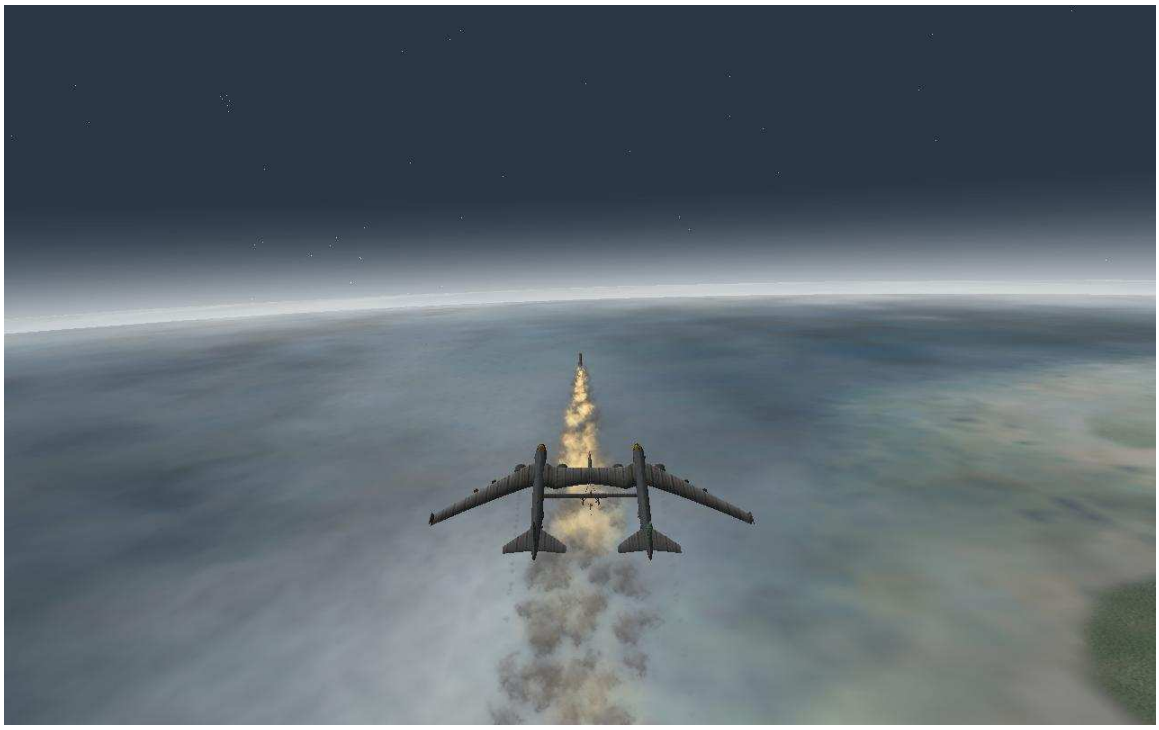
Variant 2 (magnetic repulsion components):
First stage – Castor 120 core with 4 Castor 4B boosters.
Second stage – Castor 120.
Third stage – ZTC hybrid engine made from Chariot and Black Arrow components. (H202/Kerosene (w/paraffin & Al)

Payload – Anodes (x2) – 50 kg (x2)
- Cathodes and mounts (x2) – 100 kg (x2)
- Titanium and aluminum trusses for construction materials – 1000 kg.

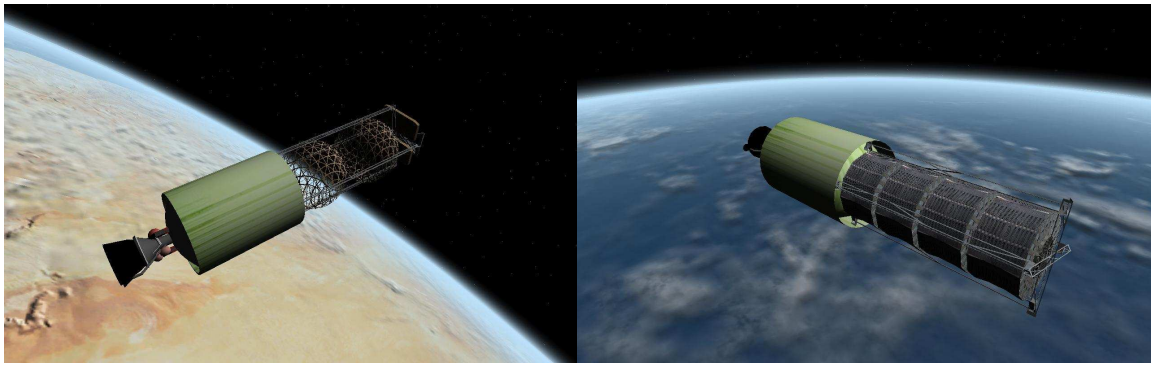
Length - 36.53 m.
Weight – 167,568 kg.

Revision History:
V0.1 – early beta.
V1.0 – Changed many of the fields in both Dædalus' and rocket configuration files. Added 2 cargo rocket platforms for launch from the Dædalus – both with payloads for creating the Ananke Tether-Sling.
V1.5 - This version. Extensive revisions to the Dædalus' mesh and configuration files. A lot of time spent on revising the Dædalus aerodynamics and reassembling the various rocket configurations as Dædalus payloads.
V1.6 – fixed directory name in archive. Thanks liber.

The ZanTar-Cheetah Ltd. Fleet circa 2022



Five seconds after jettison – a modified Boeing X-37 B test launch.



Iktope Platform payloads.

Hope this is as fun for you to test as it has been for me to create!
- n0mad23 (a.k.a. Sean M. Kilpatrick)

Research Sources:

USAF, Boeing, Air & Space Magazine Physorg.com, NASA, Encyclopedia Astronautica, Orbiter-Forum, Wiki.