

Space Tankers

user manual

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Disclaimer

This software is provided as it is without any warranty of any kind.

The project has been developed to be used as an add-on for Orbiter Space Flight Simulator by Martin Schweiger (www.orbitersim.com). Designed for Orbiter 2006 Edition, patch 1 (build 060929).

Introduction

Space Tankers is an addon with two vessels which can be used for refueling of another spaceships. One tanker (Tanker) is a simple non-reusable ship and next one is a winged reusable ship (Albatros). Both tankers are pilotless and should be launched to LEO with Energia rocket from *ENERGY project*.

Requirements and limits

Be sure that *ScnEditor* module is activated at *Modules* tab in Orbiter *Launch pad* dialog. The Scenario Editor is required for configuring Space Tankers.

The *Limited fuel* checkbox in *Parameters* tab in *Orbiter Launchpad* dialog should be switched on.

Some scenarios requires the following addons:

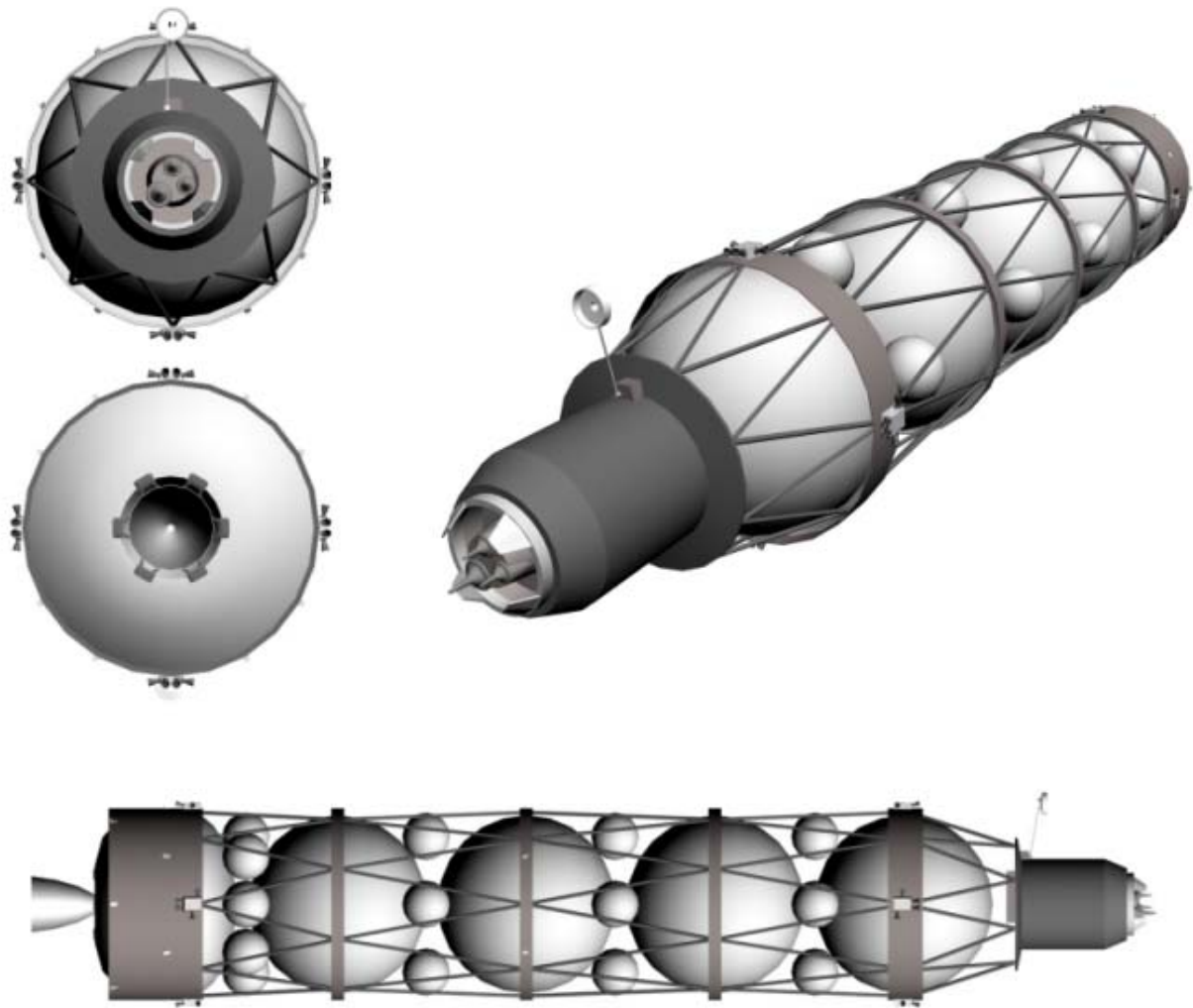
1. *Space Tugs*. Can be downloaded from here:
<http://kulch.spb.ru/Eng/downloads.shtml>
and from here:
<http://www.orbithangar.com/searchid.php?ID=1292>
2. *ENERGY project*. Can be downloaded from here:
<http://kulch.spb.ru/Eng/downloads.shtml>
and from here:
<http://www.orbithangar.com/searchid.php?ID=1036>

Tanker vessel

Tanker is non-reusable unmanned vessel. Intended to be launched as a payload of Energia HLLV.

Technical specifications

| | |
|--------------------|---------|
| Length | 32.2 m |
| Diameter | 5.95 m |
| Empty mass | 7 mT |
| Tank capacity | 60 mT |
| Fuel mass | 23.2 mT |
| Main engine thrust | 116 kN |



HUD

For features of Tanker's HUD see the picture:



On the left side you can see the aerial status indicator and fuel tank status indicator.

On the right side – the display of Refuelling system. It shows you the current situation with refuelling of docked vessel tanks.

Keyboard interface

In addition to the usual keyboard Orbiter combinations you can use:

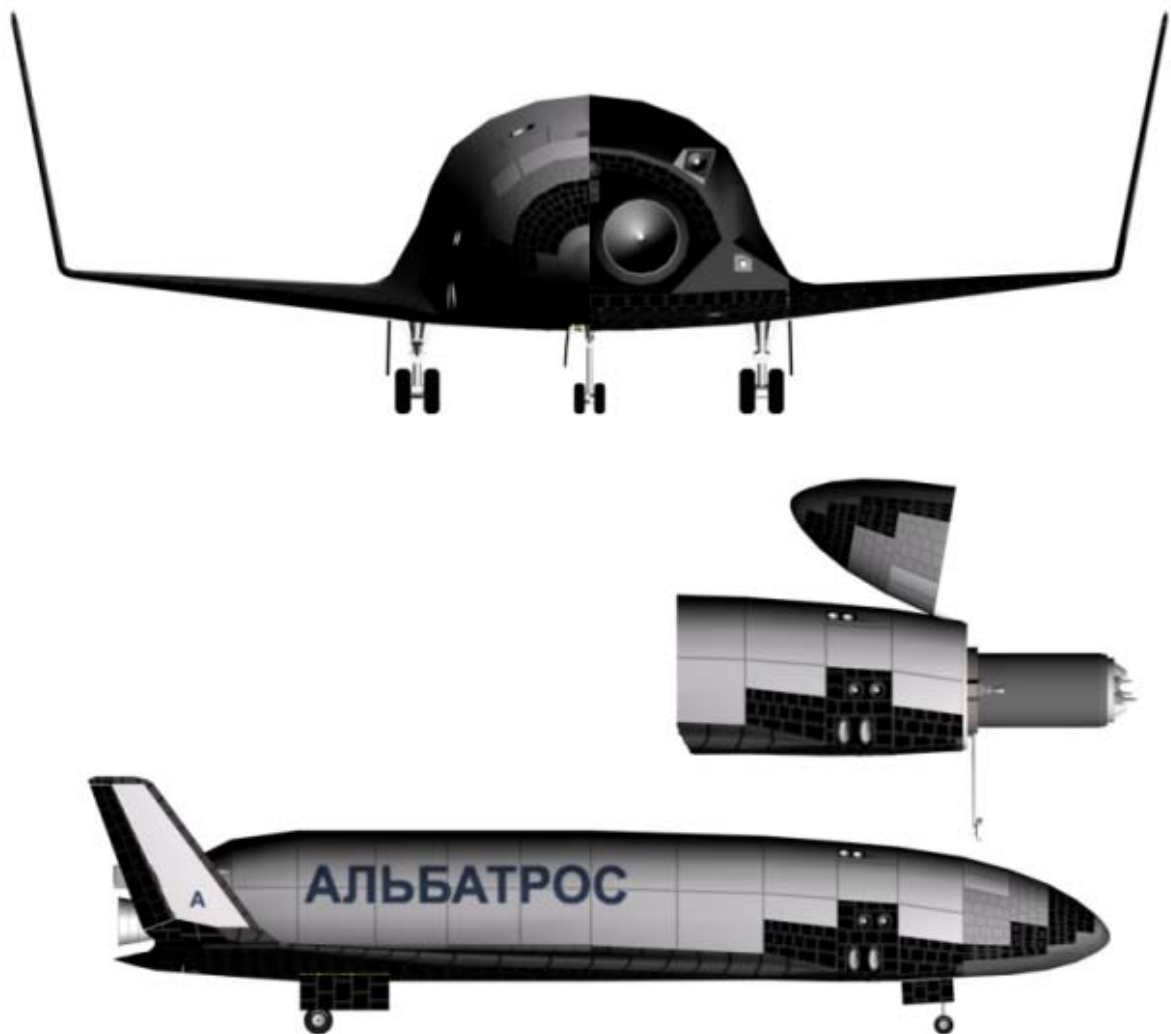
- D Deploy / retract the aerial
- S Start / stop refuelling or fuel dumping operations
- N Switch tank to refuel

Albatros vessel

Albatros is unmanned reusable winged space tanker. Intended to be launched as a payload of Energia HLLV.

Technical specifications

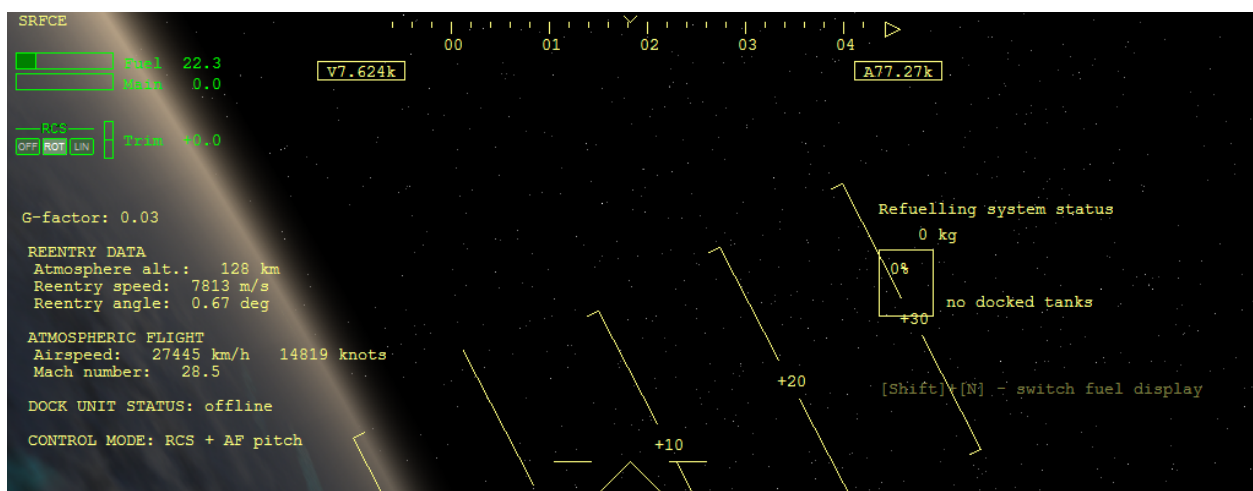
| | |
|---------------------|--------|
| Length | 31 m |
| Wing span | 22.5 m |
| Empty mass | 45 mT |
| Tank capacity | 25 mT |
| Fuel mass | 22 mT |
| Main engines thrust | 116 kN |





HUD

Albatros is equipped with special HUD, see the pictures:



At the right side we have a *Refuelling system indicator* – the same as on Tanker vessel. In addition you can switch the refueling system to fuel dumping mode.

At the left side Albatros displays some specific information. Here you can see the G-factor indicator, atmospheric and reentry info and the current state of docking unit and orientation system.

Orientation system state (Control mode) changes automatically and can be:

| | |
|----------------|---------------------------------------|
| RCS | only Reaction Control System is works |
| RCS + AF pitch | RCS and elevators |
| RCS + AF | RCS and all control surfaces |
| AF | aerodynamical control surfaces only |

Before the landing you will see additional indicators at the center of HUD:



It are landing gears, drag chute and speed brake indicators.

Postlanding automatics

After touchdown Albatros performs some actions:

- Deploying drag chute
- Enabling speed brakes
- Releasing drag chute
- Enabling wheel brakes

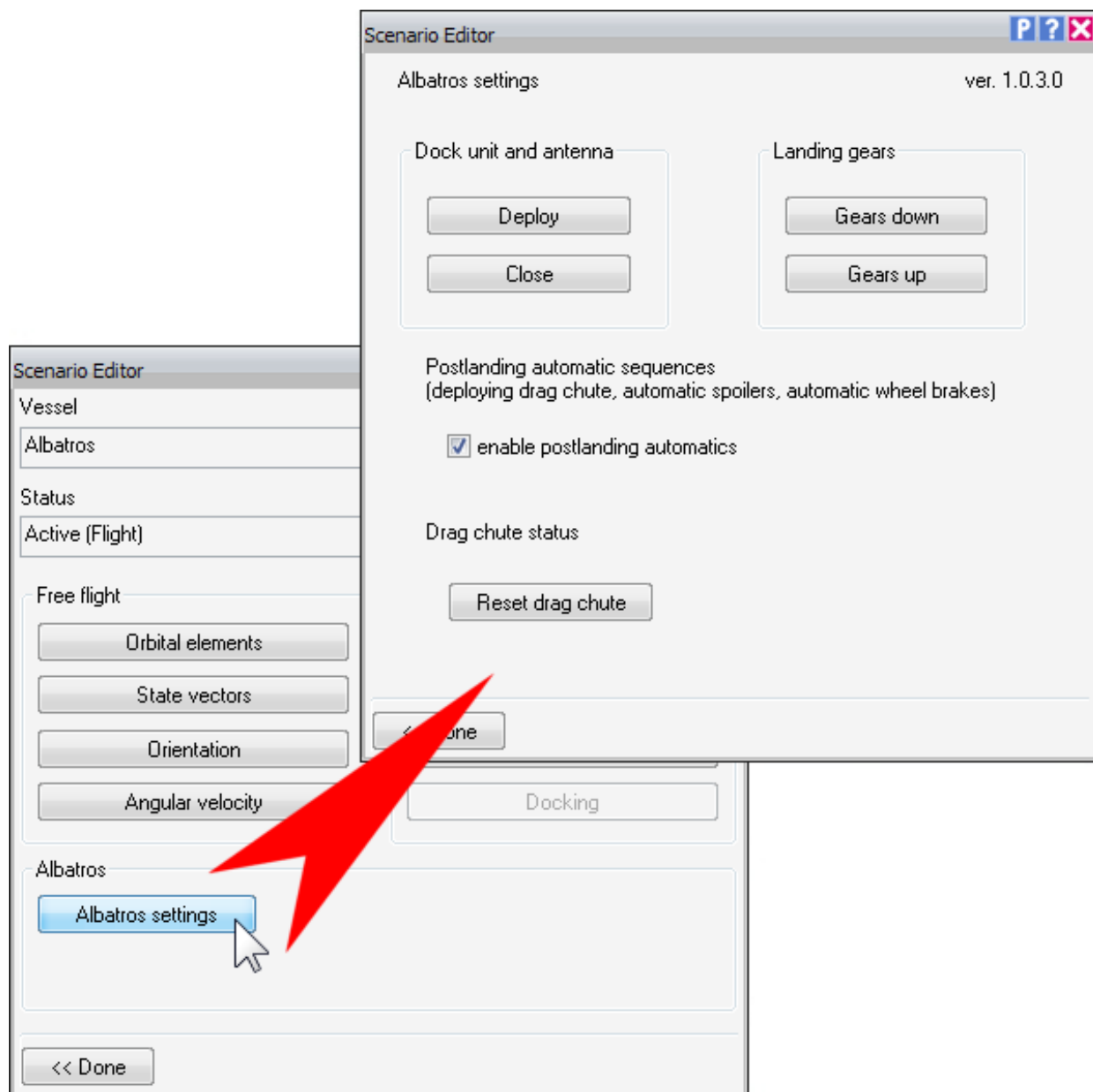
Keyboard interface

In addition to the usual keyboard Orbiter combinations you can use:

| | |
|--|--|
| | Close / deploy the docking port and aerial |
| | Landing gears up / down |
| | Enable speed brake |
| | Left and right wheel brakes |
| | Start / stop refuelling or fuel dumping operations |
| | Switch tank to refuel |
| | Switch refuel system to dump mode |

Configuring

Albatros can be configured with Orbiter's *Scenario Editor* (read more about Scenario Editor in *Doc\ScenarioEditor.pdf* manual).

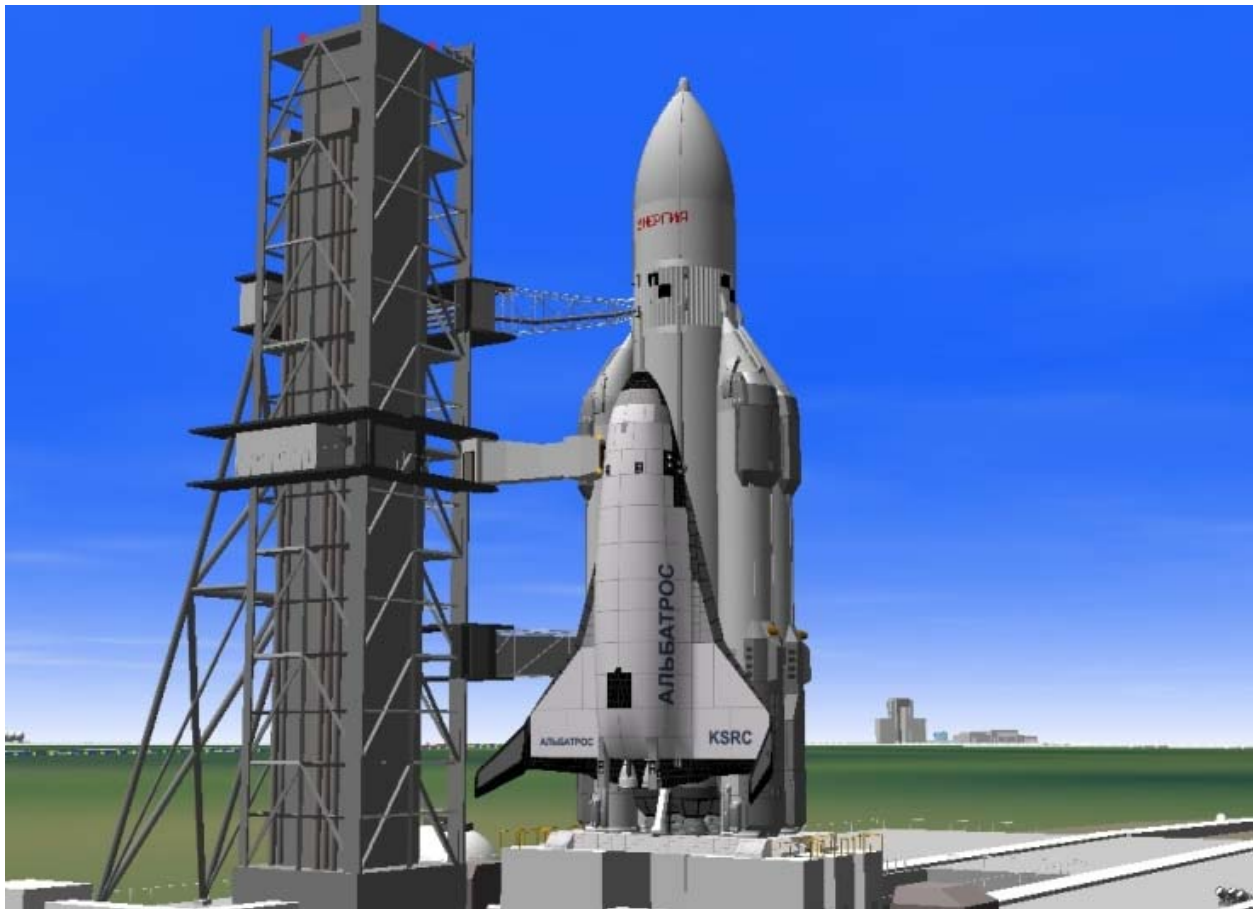


In *Dock unit and antenna* section you can set the docking port and aerial state – to deploy click the *Deploy* button, to retract click the *Close* button. *Landing gears* section allows you to set gear state.

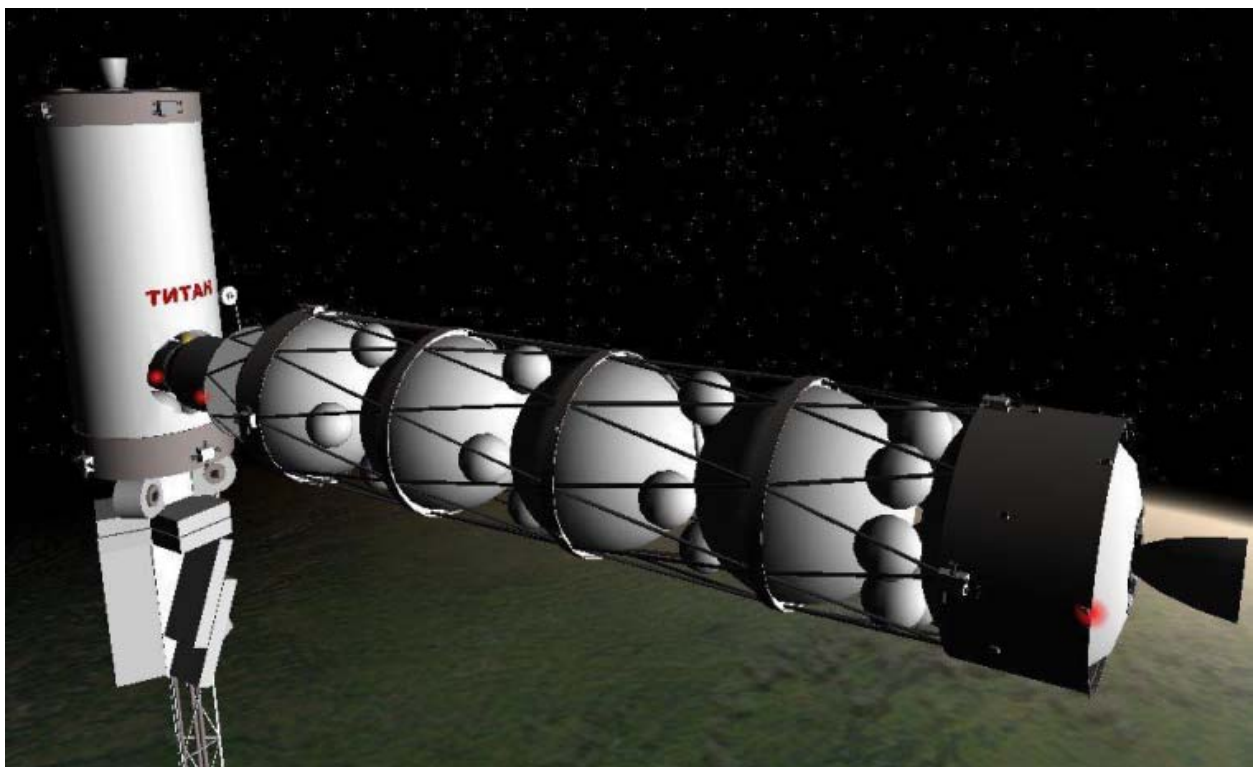
You can disable postlanding automatic sequences – just switch off *enable postlanding automatics* checkbox.

Reset drag chute button creates a new drag chute for Albatros.

Screenshots



Albatros on launch pad in SRC Polygon



Titan module refuelling