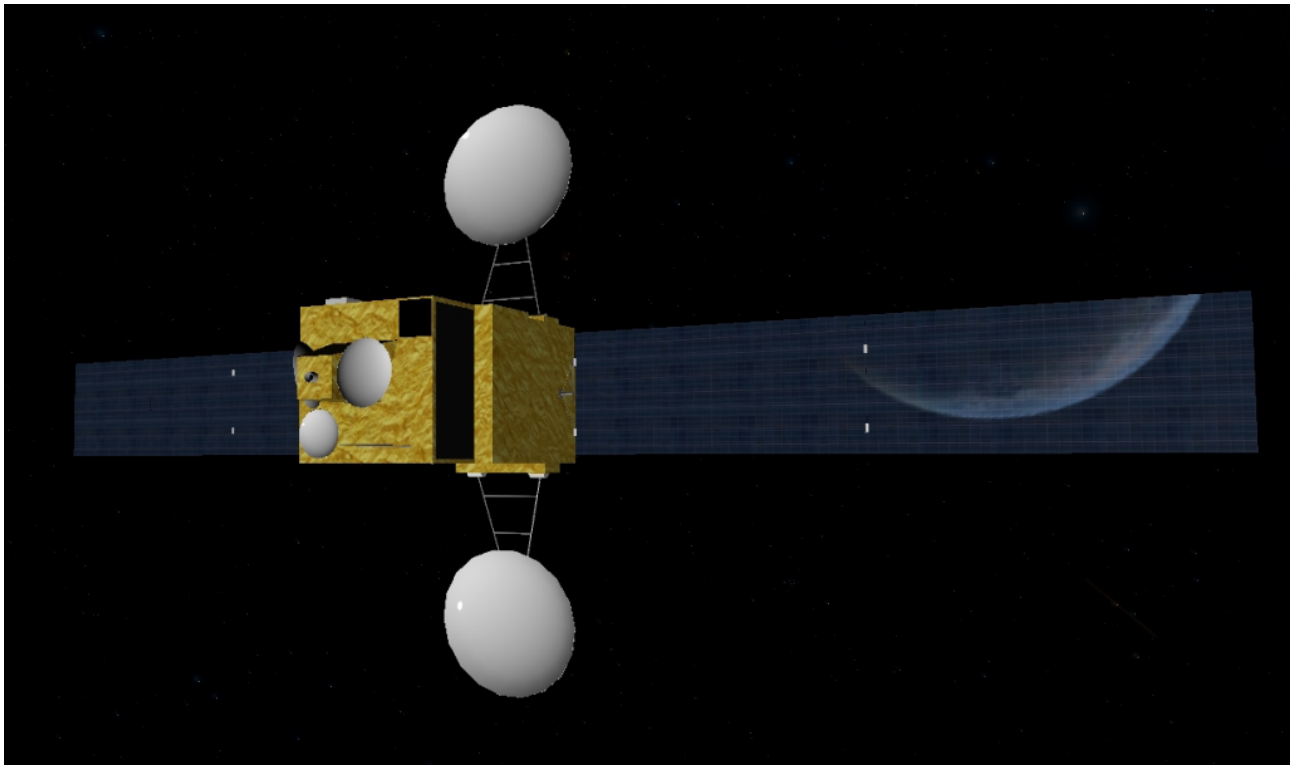
OrbiComm heavy communication satellite

An Orbiter 2010 P1 add-on by N_Molson aka Nicolas Escats

v0.86 (hotfix)



1- Introduction

This add-on simulates an heavy communication satellite. Those spacecraft are commonly used nowadays and are critical in our information-dependent societies, broadcasting streams of data day and night more than 35,000 km above our heads.

2- Scenarios and dependencies

Five scenarios are available in this version, four of which require addons that can be found on OrbitHangar :

- OrbiComm atop an Atlas 551 (requires "Velcro Rockets" + "Velcro EELV").
  Difficulty : Normal
- OrbiComm atop a Delta 4 Heavy (requires "Velcro Rockets" + "Velcro EELV")
  Difficulty : Easy
- OrbiComm atop a Centaur G tug, the whole carried inside the Space Shuttle payload bay (requires "Velcro Rockets")
  Difficulty : Normal
- OrbiComm atop a Proton-M/Briz-M (requires "Velcro Rockets)
  Difficulty : Hard
- Orbicom in GEO (no dependencies)

The scenarios are located in the "Satellites and Probes\OrbiComm" folder.

3- Specifications

Dry Mass : 3,201 kg
Total Mass : 6,501 kg

- 2x 'Aerojet R-4D-15' Maneuvering Engines : 890 N of thrust, ISp = 323 sec.
- 12x 'MOOG-ISP DST-12' attitude control thrusters : 22 N of thrust each, ISp = 301 sec.
- Control Moment Gyroscopes (CMG), 3 axis, electrical power. Generated torque equivalent to 6.5 N per axis.

4- Hotkeys

Ctrl + 1 Deploy main dishes
Ctrl + 2 Orient solar arrays (vertical/horizontal) - **Note : don't save the scenario**

with solar panels in horizontal position – it will mess the animation on reload. Will be fixed soon !

Ctrl + 3	Unfold solar arrays
U	Toggle control mode (RCS or CMG)

5- Hints & tips

- Control Moment Gyroscopes are very useful to "lock" the satellite into a specific attitude (Prograde, Normal+/-...). However, they are nothandy to change the attitude (to perform an orbit correction).
- RCS are more powerful, but they drain propellant from the main tank and are quite inefficient (low ISp). Therefore their use should be as limited as possible.
- Rockets like the Atlas 551 or Delta 4H will only allow you to set the final orbit apoapsis, and make a limited orbital inclination correction manoeuver. The satellite carries 3,300 kg of propellant which allow to circularize the orbit and bring the orbital inclination to 0°.
- Read the scenarios descriptions for more hints.

6- Changelog

v0.8 :

- Initial release.

v0.81 :

- Hotfix, the mesh was missing.

v0.85 :

- Shuttle/Centaur-G (Velcro) scenario added.
- New Velcro Centaur-G tug (existing one was Centaur-G "prime", which is heavier).
- Proton-M/Briz-M scenario added.
- New Velcro Briz-M tug (core + torus, includes a full version and a partially-fueled version).
- Added helping information in the scenarios description.

- Some details added on OrbiComm mesh.
- OrbiComm D3D9 materials properties file now included.
- Re-designed OrbiComm thrusters, now uses real hardware for more realism (see '*3-Specifications*').

V0.86 (hotfix) :

- Hotfix, the .dll module included in the archive was outdated.
- User guide converted to .pdf for enhanced reading experience.

Special Thanks to orbinaut '*Sputnik*' for the very handy '*Velcro Rockets*' addon !

Have Fun !

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