

ORBITER

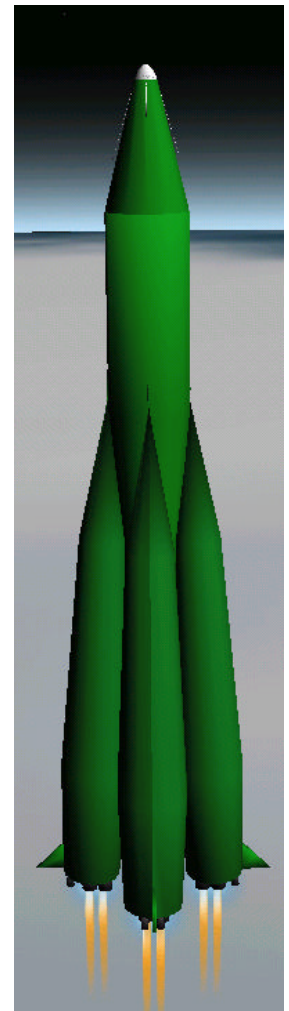
Sputnik 1, R7 8K71 Version 2.0

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<http://www.orbitersim.com>

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ORBITER.....	1
Sputnik 1, R7 8K71 Version 1.0.....	1
1. INTRODUCTION.....	2
2. SPECIFICATIONS.....	2
3. VERSION HISTORY.....	2
Version 1.0.....	2
4. LAUNCH.....	3
FLIGHT PLAN.....	3
KEYBOARD.....	3
5. ORBIT.....	3
KEYBOARD.....	3
6. CONFIGURATION.....	4
Adapter & Nose Cone.....	4
6. SCENARIOS.....	5
Sputnik 1 at Baikonur.....	5
Sputnik 1 at Canveral.....	Error! Bookmark not defined.
7. CREDITS.....	5



1. INTRODUCTION

This document explains how to use and operate the Sputnik R7 8K71 module for Orbiter.

The R7 8K71 was developed by Sergei Korolev as the Soviet Union's first ICBM. However it was much better suited for use as a satellite launcher as it took several hours to load it's cryogenic fuels. Its descendents still form part of the Soyuz Booster the mainstay of Russia's manned space program.

What is interesting about the development of the R7 was that the United States built their rockets in a slow progression of capabilities. V-2 to Redstone to Atlas. The Soviet leadership faced with a serious gap in their bomber capability with the U.S. decided to accept Korolev's proposal to jump straight into an ICBM and skip building Redstone style rockets (R-5). Korolev was able to do this by grouping dozens of smaller engines to gain the power to launch a ICBM and also a Satellite into orbit. Also this sabotaged the plans of his rival designers in the Soviet space bureaucracy.

2. SPECIFICATIONS

To be added later

3. VERSION HISTORY

Version 1.0

- *Initial Release

Version 2.0

- *Updated to the latest revision of Orbiter

- *Reworked sources file to the latest Multi-Stage SDK

- *Added AutoPilot capability

- *Scenarios require the Earth:1962 but Earth:1962 no longer over writes any existing files and there is no configuration involved other than unzipping.

4. LAUNCH

With the addition of Vinka's Autopilot you no longer need to manually control the ascent of the R7-Sputnik. It is on by default. The Flight Plan reflect the parameters entered in for the flight plan.

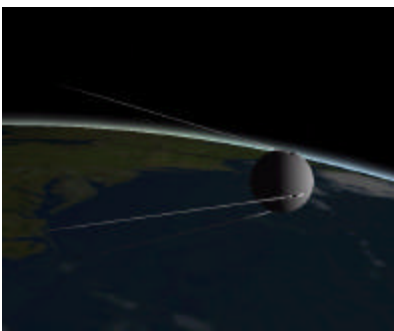
FLIGHT PLAN

MET+0	Launch
MET+2	HUD To Surface Mode
MET+4	Bring up Surface Mode MFD
MET+5	Begin Pitch
MET+20	Pitch to 80 degrees
MET+40	Pitch to 70 degrees
MET+60	Pitch to 60 degrees
MET+80	Pitch to 50 degrees
MET+100	Pitch to 40 degrees
MET+120	Pitch to 30 degrees
MET+123	BECO (Booster Engine Cut-Off)
MET+140	Pitch to 20 degrees
MET+160	Pitch to 10 degrees
MET+180	Pitch to 0 degrees
MET+200	Pitch to -25 degrees
MET+270	Pitch to 0 degrees
MET+291	SECO

KEYBOARD

J	Jettison Stage	Booster -> Core -> Nose Cowling -> Sputnik
P	Auto Pilot	Enable or disable Auto Pilot

5. ORBIT



Sputnik 1



Sputnik 2

KEYBOARD

O	Operate Radio	Plays Sputnik telemetry beep (Sputnik 1 only)
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6. CONFIGURATION

The R7 module is separate from the Sputnik module. This module uses the configurable payload option of the Atlantis_Sat_MMU and Ariane V. The R7 is configurable through the scenario file and you can put different types of payload on it through manipulation of the parameters.

```
Sputnik1:R7_8K71
  STATUS Landed Earth          <= Standard
  BASE Baikonur:1             <= Standard
  HEADING 90.00                <= Standard
  FUEL 1.000                   <= Standard
  CONFIGURATION 0              <= 0 for Booster Stage 1 for Core Stage only
  BOOSTER_FUEL 158400.000      <= Mass of Booster Fuel Remaining (kg)
  SAT_OFS_X 0.000              <= X Offset of Satellite Mesh
  SAT_OFS_Y 0.000              <= Y Offset of Satellite Mesh
  SAT_OFS_Z 14.685             <= Z Offset of Satellite Mesh
  SAT_JETTISONED 0             <= 0 for Satellite Attached 1 for No Satellite
  SAT_SHOW 0                   <= 0 for no effect 1 for Always show Satellite Mesh
  SAT_NAME SPUTNIK             <= Config name for Satellite
  SAT_MESH SPUTNIK             <= Mesh name for Satellite
  SAT_MASS 84.000              <= Mass of Satellite (kg)
  ADAPTER_NAME r7adapter       <= Mesh name for Adapter
  NOSECONE_NAME r7cowling      <= Mesh name for Nose Cone
  NOSECONE_OFS_X 0.000         <= X Offset of Nose Cone (measured from top of main body)
  NOSECONE_OFS_Y 0.000         <= Y Offset of Nose Cone
  NOSECONE_OFS_Z 0.000         <= Z Offset of Nose Cone
  SHROUD 0                     <= 0 for Nose Cone Attached 1 for No Nose Cone
END
```

Adapter & Nose Cone

To make this model as configurable as possible I have included the ability to specify the adapter mesh and the nose cone mesh. The zero point of a adapter mesh should be at the BOTTOM of the mesh. Use the ship edit utility to offset an existing adapter mesh. The z offset of the nose cone should 16.91 (main body) + length of adapter + half the length of the nose cone.

For the Luna and Vostok the adapter would be the cage like arrangement of beams connecting the second stage to the main body.

6. SCENARIOS

Scenarios require the download of the Earth:1962 add-on.

Sputnik 1 at Baikonur

October 4th 1957 launch Sputnik into history

Sputnik 2 at Baikonur

November 3rd 1957 Laika become the first living creature from Earth in orbit. Note that Sputnik 2 remained attached to the R7 core.

7. CREDITS

Rob Conley	- Module
Voyager	- Mesh
Dealer McDope	-Telemetry sound & Sputnik 2 Mesh

Thanks for your support and help