

# Afterthoughts

Just when I had everything ready to ship, my friend Mark Lund came over and asked to play **Orbital Mech**. The result: a minor change to the program, and a few more tips on how to get the most out of **Orbital Mech**.

The minor change has to do with the RVI and RPI (see page 11 of the manual). In the celestial screen, these are placed to the far left so they won't visually interfere with the action. In the docking screen, this placement makes for bad ergonomics, since you have to constantly shift your eyes from one corner of the screen to the other to keep up with both the dials and the docking ports. This was corrected.

Here is the procedure I use to rendezvous and dock.

First I turn on the "Trail" from the "Display" menu. This shows me how my orbit compares with the station's, and it makes more clear to me what happens when I make orbital corrections.

Next, I wait a little while for the station and ship to get into position for a Hohmann transfer (p. 24). For the initial configuration, this is when the ship is about 15° behind the station.

While I'm waiting, I keep the ship pointing in the direction of motion using the keyboard (pp. 2,3,10). I never use the mouse for rotation since I have enough trouble making sure it's on the proper thruster.

At the transfer point, I give a short thruster burst at level 2 (the second most powerful level), in the direction of motion of the ship, then I wait some more. If I did it just right, the ship will go right up to the station after half an orbit, the docking screen will activate, I'll make a correction to bring up the perifocus (pp.20-21), then I'll begin the docking procedure.

Most of the time, I don't hit it just right, so I begin making corrections after the manner described on page 25. For this I mainly use midrange thruster power and apsidal maneuvering (pp.20-21). Alternatively, I use the spiral maneuver described on page 25.

When I get to the docking screen, I level off the ship. Once it's level, you don't need to rotate it anymore\*, and this leaves that hand free to implement the *Lund Technique*, i.e., controlling right-left thrusting from the keyboard and up-down with the mouse.

On the approach, I keep an eye on the  $\Delta V$ , the difference in the station and ship velocities. I try to keep the indicator pointing upward, and to maintain a  $\Delta V$  of 30 to 60. I mainly use the fourth and fifth thrust levels to make corrections at  $\Delta V$  below 100. When I'm getting close to the station and I've got the  $\Delta V$  below 25 or so, I just use the fifth (lowest) level of thrust.

When the  $\Delta V$  indicator points right, thrust left, when it points left, thrust right, etc. With practice, you'll learn how much thrust is needed to maintain your course.

Once you've docked, you have to back off to the next lower level of magnification (in the side view docking screen) to be able to dock again.

Because of the corotational effect described on pages 26 & 27, you must make constant corrections to keep the ship on course when docking. The ship will never stand still relative to the station, but this effect is lessened when the mass of the attractive body is reduced, and docking becomes correspondingly easier. Use "**Define System**" under the "**Enviorns**" menu to decrease the mass of the attractive body.

Items to be included in a future release of **Orbital Mech**:

- Some sort of a "Lunar Lander" mode.
- An OMV (Orbital Maneuvering Vehicle) mode, where you'd try to transfer back and forth from a station in a low orbit to one in a high orbit.
- Gravity gradient effects.
- Versions for the Atari ST and Amiga.
- I'd be glad to consider any suggestions you have too.

Finally, here is another book I found at the library.

Gordon R. Woodcock, *Space Stations and Platforms*. Malabar, Florida: Orbit Book Company, 1986.

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\* When the ship smashes into the station, it bounces back and rotates. Wait till it stops rotating, then level it off again. Sometimes I smash the ship into the station just for the fun of it.