

# **Amateur Radio on board International Space Station ARISS-Europe**

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## **COLUMBUS**

### **1. An Amateur Radio Station on the European Space Module Columbus**

We have informed you, over the last few years, of the project to have an amateur radio station on the future European Space Laboratory Columbus.

The European Space Agency, Directorate Manned Spaceflight and Microgravity, is supportive of this project.

We have discussed the installation of patch antennas on the nadir of Columbus. These antennas would be fixed on the Meteorite Debris Panels protecting the hull of the module. The antennas would permanently be oriented to the earth.

The necessary coaxial feedthroughs for our antennas have already be installed on the conical end of Columbus, where it attaches to the structure of the ISS. Coax cables will run on the outer surface of the module to the antennas underneath.

We have an agreement for patch antennes covering VHF, L-band and S-band. Patch antennas for VHF would be too large to be fixed on the Meteorite Debris Panels.

### **2. The benefits of adding ARISS antennas to the Columbus module.**

The existing ARISS antennas on the Service Module are shared through diplexers and will not be especially effective on the microwave bands. The proposed Columbus antennas will work on 435MHz, 1.26GHz and 2.4GHz. Using these dedicated antennas will, for the first time, permit viable ARISS operations on these useful bands.

With the Columbus module being located at some considerable distance from the other two ARISS stations, this will permit parallel operations on the new bands at the same time as the existing operations.

The availability of these new frequencies will enable us to establish wideband and video operations for the first time. This facility would provide ATV facilities for School contacts and, additionally, transponder operation in continuous operation.

The Columbus module is designed to undertake experiments but may also be used as temporary sleeping accommodation for the European astronauts. It is anticipated that most, if not all of them, will be licensed amateurs.

Different sleep patterns of the astronauts can restrict the existing operations so this "remote" facility would overcome this constraint.

To summarise, the addition of these new antennas will provide greatly enhanced opportunities for amateur radio operations on the ISS and an additional emergency communication facility for the astronauts.

### **3. Funding**

The installation of the ARISS antennas on Columbus is to be done by the contractor (and subcontractors) in charge of building Columbus.

The installation cost exceeds 100.000 euro.

This amount is already partially covered:

- ESA / MSM takes into account whatever exceeds 100.000 euro
- ESA ISS Utilisation Strategy and Education Office contributes 50.000 euro
- The Belgian Federal Services for Scientific, Technical and Cultural Affairs offer 5.000 euro
- AMSAT(NA) contributes 10.000 euro.

We still need 35.000 euro to cover the cost.

### **4. Call for financial support**

Columbus is presently in its final construction stage.

As time is very short, additional contributions from interested parties are urgently solicited.

Suitable recognition of all supporters will be provided.

I am looking forward to possible input of the ARISS-Europe member societies.

73

Gaston Bertels, ON4WF  
ARISS-Europe chairman