



International Amateur Radio Union Region 1  
General Conference - 16<sup>th</sup> to 21<sup>st</sup> November 2008 - Cavtat, Croatia



<b>SUBJECT</b>	<b>ARSPEX WG Report</b>		
<b>Society</b>	<b>ARSPEX WG</b>	<b>Country:</b>	
<b>Committee:</b>	<b>C3</b>	<b>Paper number:</b>	<b>CT08_C3_03</b>
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## 1. Summary

In the work period 2006 – 2008, the working group activities have been focused on ARISS, Amateur Radio on the International Space Station.

Main topics are:

- educational school contacts with astronauts onboard the ISS
- installation of amateur radio antennas on the European Columbus module.

## 2. ARSPEX working group members

Presently, ARSPEX member societies are:

AMSAT-Belgium  
AMSAT-CT  
AMSAT France  
AMSAT-Italy  
AMSAT-SM  
AMSAT-UK  
ARI  
DARC  
PZK  
REF-Union  
REP  
RSGB  
UBA  
USKA

All interested IARU Region member societies are invited to join the working group and nominate a delegate.

## 3. ARISS School Contacts

ARISS has developed a privileged relationship with Space Agencies NASA, ESA and Roscosmos/Energia.

Astronauts and cosmonauts – most have an amateur radio licence – use the amateur radio VHF station onboard the Russian Service Module for contacts with amateur radio ground stations worldwide.

The main activity is educational outreach, which is most appreciated by the Space Agencies. ARISS international has developed an efficient system for organizing school contacts: students prepare questions and have the possibility to put their question to an astronaut onboard the ISS over amateur radio, and get his/her answer from space real time. These ARISS contacts are integrated in the workload of the astronauts. ARISS has no access to their free time.

Every year ESA sets up two educational events in primary schools. ARISS-Europe has an arrangement with ESA for providing an ARISS School Contact for such events.

Moreover, when ESA astronauts perform a space mission on the ISS, ESA asks ARISS-Europe to provide radio contacts with the astronaut for schools in the country of the astronaut. These events are highlighted in the media and the educational role of the amateur radio service is officially recognized.

ARISS mentors work with local amateur radio clubs (mostly by e-mail and phone) to set up an efficient satellite type station in the schools selected for a contact. In Region 1, ARISS-Europe has mentors in UK, Belgium, France and Italy.

When a direct radio contact cannot be set up, the radio contact with the ISS is established by one of the ARISS dedicated ground stations and from there, the signals are relayed by phone to the school. This solution is called a “telebridge”. The phone link generally involves up to ten hams: the astronaut, the ground station operator, the operator in the school, the coordinator, a moderator and the hams in charge of broadcasting the audio of the space talk over EchoLink and IRLP.

In the period 2006 – March 2008, 28 ARISS School Contacts were performed in Region 1:

- 4 in France (2 ESA organized events)
- 3 in Belgium
- 7 in Italy (2 ESA organized events)
- 5 in Germany (2 ESA organized events)
- 1 in Hungary
- 1 in the Netherlands (ESA organized event)
- 2 in Portugal
- 1 in Spain
- 1 in UK
- 1 in Kuwait
- 1 in Switzerland (on request of ESA)
- 1 in Sweden (on request of ESA)

All 28 school contacts were highlighted in the media, many at national level. Moreover, ESA has set up a dedicated webpage for these amateur radio activities.

#### **4. Columbus**

November 2002, I submitted a request to ESA's Directorate for Manned Space Flight and Microgravity, asking for ham radio facilities on the European Space Laboratory Columbus. In 2003, ESA's Columbus division agreed on the principle.

I took five years to solve the many issues related to the installation of amateur radio antennas on Columbus. Technical constraints are extremely severe, due to the intense vibrations the antennas have to withstand during launch in a Shuttle bay.

The patch antennas have been developed by the Technical University of Wroclaw, Poland.

The L/S-band antennas have been fixed on the nadir of Columbus November 2007.

The Columbus module has been delivered to the International Space Station by Atlantis Shuttle Mission STS-122, February 2008.

ARISS-Europe has collected 72.000 Euro for the construction of the antennas. All donations are published on ARISS-Europe's website. See <http://www.ariss-eu.org/donations.htm>

The initially estimated cost was 80.000 Euro, but the total bill amounts to 86.000€.

The UBA has paid the final bill to the Technical University of Wroclaw. This means that the UBA has advanced 14.000 Euro cash.

A contribution from the Region to alleviate this financial burden would be most welcome.

ESA also contributed to this project, supporting the installation cost (installation of feedthroughs, coax cables, fixation on the module). From an inside source, I was told that ESA's financial involvement in ARISS antennas is about 1 million Euro.

Presently, I have set up weekly teleconferences for the ARCOL technical working group which is planning the onboard equipment for **A**mateur **R**adio on **C**OLumbus.

This will be the first ever amateur radio station on European territory in Space.

## **5. ARSPEX website**

An ARSPEX website has been installed. See <http://www.arspex.org/>

Respectfully submitted

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