

ARISS International Delegate Meeting
June 17 - 19, 2009
ESTEC - Noordwijk

REPORT

Wed June 17th
Joint ARWG - ARISS Meeting for Delegates
Guided Tour of ESTEC Technical Facilities
Welcome Dinner
Evening Presentations on Future ARISS Projects

Gaston Bertels ON4WF welcomed all attendees. He asked participants to introduce themselves.

VHF-UHF antennas

Mark Severance N5XWF gave an AIS presentation on the co-usage by ESA and ARISS of VHF antennas for AIS (Automatic Identification System), the tracking system for ships. STS-129 should be the shuttle mission associated with the space walk that will take place for the attachment of the antennas we will co-use. NASA will be responsible for cost of the spacewalk. ESA will be responsible for the cost of the installation, for the cost of the clamp to install the antennas, and the cost for the integration of the clamp.

Onboard equipment

At this annual meeting, we will discuss which radios to install in the *Columbus* module. The VHF Ericsson radio is on board in the Russian segment. The UHF one, that has never been used, is in the JEM. We have one of the Kenwood D-700s, also.

We will get a great deal of help from NASA and ESA for the work on the safety certification and the cost of this, the cost for upmass, and the expense for an operating location in the *Columbus* module.

Interference issues

Sergej Samburov RV3DR asked what frequencies we will use in *Columbus* on 2 meters and 70 centimeters. We will have to watch for problems for interference with the Russian frequencies for ARISS and AIS. But AIS will have a very narrow filter, so we shouldn't interfere, and it is a receive-only radio, not a transmitter.

We hams will have to coordinate not only school QSOs, but perhaps any leisure time that crew members may wish to operate the radios. We will need to have coordination for astronauts and cosmonauts so they don't interfere with each other on the radios.

Lou says the equipment is robust enough, and built in such a way to withstand this problem. We could have a schedule or timetable if necessary. Some crew members may

want to talk when flying over their own country. We could allocate some modes for some radios, doing frequency coordination, or have one radio strictly for school QSOs. The possibility of using a “signal key” to help the crew operate only one radio at a time was also proposed. This is similar to the technique that railroads use to control the bi-directional use of a single track.

Equipment deployment planning

We will probably have immediate-term plans for the ham radio station, and then develop medium-term systems.

Currently, we have several items on board that can be used:

- the Ericsson UHF radio that is stored in the Japanese module
- the Ericsson VHF radio we have stored in the FGB
- the second Kenwood radio (it does not have the mike or front panel display, since these are on the other D-700 radio that is being used right now).

We are currently using the second D-700 plus the 3 SSTV-capable sets of equipment.

The VC-H1 runs on batteries, so its usage is limited. One requires a laptop that we can borrow at times from the Russians, but NASA wants laptops to all be the same, and some of the older laptops are not running well, for instance, the display stopped functioning on one. The other of the SSTV systems must be in crew-attended mode because something causes it to hang up at times. New laptops are being brought up, but they are often moved to replace ones that break. The new laptops use USB, and our radio equipment uses RS-232. We are looking into how to fix this.

Moreover, we have L-band and S-band antennas.

Sergej suggests having different modes in the different ISS modules. He says the cosmonauts think the Ericssons are old model radios. He was asked if he will be providing new radios.

We need a team to think about immediate-term plans and medium-term plans.

Russian telemetry tests

When Russia had the two recent hard Soyuz landings, they had reception problems of telemetry, and Cosmonaut Sergej Krikalev suggested Russia uses 166 MHz for new telemetry frequencies. The Service Module might have to be used for testing where they have their special radios near ours. For testing this telemetry they will be using our antennas, until October. There will be reception tests to find out when reception is best. If the tests go well, actual usage would be half an hour four times a year, and it is when our ARISS radios are shut off, and we cannot do school QSOs anyway.

Wednesday afternoon

- ESA’s Jean-Luc Suchail F1FGK guided the participants on a tour of the ESTEC technical facilities.
- Participants visited the Erasmus High Bay and met some ESA astronauts.

Evening Session

- Francesco IK0WGF gave a presentation about a “hybrid” ARISS QSO. The mountains near a school were problematic for the ARISS QSO, so Francesco’s team performed a combined telebridge and direct QSO to facilitate the 10 minutes for the QSO. The ARISS Team expressed interest in this method, in particular, because it can assist schools all over the globe that have obscurations, and otherwise could not have a direct QSO. See:
http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/A01_ARISS_direct_telebridge.pdf
- Paolo IW3QBN gave a presentation on holding a commemorative event involving ARISS in honor of Marconi receiving the Nobel prize. This event could include things such as transmitting some of Marconi’s acceptance speech, some SSTV images that are related to Marconi, a commemorative QSL card, and so on. Paolo’s team will write a more defined proposal for working out details and will submit it to the Project Selection and Use committee. See:
http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/A02_Nobel_Marconi.pdf

Thursday, June 18th
ARISS-International Annual Meeting

Attending:

Kenneth Ransom, N5VHO, representing Johnson Space Center ISS Program Office
 Rosalie White, K1STO, ARISS-US Delegate representing ARRL (also ARISS Secretary-Treasurer)
 Will Marchant, KC6ROL, ARISS-US Delegate representing AMSAT (also ARISS Vice Chairman)
 Gaston Bertels, ON4WF, ARISS-Eu Delegate representing UBA (also ARISS Chairman)
 Keigo Komuro, JA1KAB, ARISS-Ja Delegate representing JARL
 Sergey Samburov, RV3DR, ARISS-Ru Delegate representing AMSAT-Russia
 Christophe Mercier, ARISS-Eu Delegate representing AMSAT-France
 Maurice-Andre Vigneault, VE3VIG ARISS-Ca Delegate representing AMSAT-Canada
 Jorg Hahn, DL3LUM/PA1MUC, ARISS-Eu Delegate
 Ed Pritchard, NASA Education Office, Johnson Space Center
 Mark Severance, N5XWF, representing Johnson Space Center ISS Program Office
 Graham Shirville, G3VZV, representing AMSAT-UK
 Lou McFadin, W5DID, representing AMSAT-NA
 Oliver Amend, DG6BCE, representing AATiS, and a German ham group
 Cor Wielenga, PD0RKC
 Fabiano Moser, CT/PY5RX, representing AMSAT Portugal
 Francesco De Paolis, IK0WGF, representing AMSAT Italy

Paolo Pitacco, IW3QBN, representing AMSAT Italy
Keith Pugh, W5IU, representing AMSAT-NA
Neil Melville, PA9N, ESA
Diogo Ferreira, CT2HPN, representing AMSAT Portugal
David Sunderland, PA3GLK, representing ESA ERASMUS
Cristina Olivetti representing ESA Education, ARWG member

Welcome by Mr Piero Messina

The ARISS Team received a hearty welcome from Piero Messina, Head of the Coordination Office, ESA Directorate of Human Spaceflight, European Space Agency. He stated that linking the International Space Station to a large number of students to aid with their education, and informing the general public about space, are very important to ESA. ESA appreciates the ARISS Team's efforts in supporting this educational outreach. ESA believes in our goals. Our efforts on behalf of education are important because the activity allows the space team to interact with people around the globe. We have an honor and a burden to fulfill these important elements. The work helps ESA and other space agencies to exploit space for the good of our societies at large. This is especially important now that the ISS is fully crewed.

Mr. Messina reported that ESA will be listening to our proposals for change and the new payload (equipment) on the *Columbus* module recently delivered to the ISS. ESA sees that what we propose should result in something good for our society. Mr. Messina's staff, in particular, Cristina Olivetti, is at our service.

Opening the meeting

Gaston ON4WF welcomed the ARISS delegates and team members, and each person introduced himself or herself.

The participants observed a minute of silence to the memory of Dieter Schliemann KX4Y who recently became silent key.

Election

An election was held for two of the three ARISS international officers for a partial term. This was required as a result of Frank Bauer stepping down as Chairman in early 2009. The election process has traditionally been handled by the Canadian delegates. Rosalie K1STO presented an election report on behalf of Canada written by Robin Haighton VE3FRH. In the past few months, he accepted nominations for a one-year term for ARISS Chairman and Vice Chairman. Rosalie called for a vote of the delegates. A unanimous vote was received from all ARISS Delegates with the following result:

- Gaston Bertels as Chairman
- Will Marchant as Vice Chairman.

Elections for the normal two-year term will take place in 2010.

See: http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/01_2009_ARISS_Elections_Report.pdf

ARISS Europe Report

The ARISS-Europe report was summarized by Gaston Bertels ON4WF.

Francesco IK0WGF proposed that their Italian station IQ2GM could be a telebridge station to help with third party rules. Will instructed Francesco to submit a telebridge station application to Dave Taylor to review.

Fabiano CT/PY5RX reported that their university in Portugal has provided a special room for ham station CS5CEP. He will send a telebridge station application to Dave.

Both Francesco and Fabiano got permission from their telecommunications agencies to be approved for third party operations.

Gaston reported that Cristina will continue to try to garner funding for ARISS through some national science programs. AMSAT-UK may get funding for a Cubesat.

To view the Europe report, see:

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/02_ARISS_Europe_Report_2009.pdf

ARISS Canada Report

The ARISS-Canadian report was given by Maurice-Andre Vignault, VE3VIG.

The science museum he works at has a large ham radio exhibit, and Maurice is asking the museum to allow the ham station to be available after hours to be operated as an ARISS telebridge station. Maurice-Andre can submit a telebridge station application to Dave Taylor.

Daniel Lamoureux requested a statement from ARISS about the status of AVATAR, and Mark Severance responded on behalf of ARISS, reporting that the AVATAR program will now be using email, not ham radio.

Maurice-Andre reported that Canada has a sufficient inventory of QSL cards.

The Canadian report may be found here:

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/03_CANADIAN_ACTIVITIES.pdf

And the associated text:

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/03_Text_for_CANADIAN_ACTIVITIES_report.pdf

ARISS USA Report

The ARISS-USA Region report was related by Rosalie White, K1STO and Will Marchant, KC6ROL.

The report focused strongly on ensuring ARISS school activity goes beyond the day of the QSO. The objective for this is to get youth involved more deeply in science and

technology and ham radio, and to get teachers to integrate science and technology including ham radio into their classrooms.

Will continues to work toward the coordination of a mentor training session the day after the Annual AMSAT Symposium, possibly October 11-12.

It was asked whether the new US president, Congress, and also the new FCC chairman have had any change in attitude toward NASA than the past administration. President Obama has proposed that Astronaut Charles Bolden become the new NASA Administrator. Charles Bolden was supportive of the SAREX program, and NASA knows he is particularly supportive of education, focusing on kindergarten through 12.

See: http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/04_2009_ARISS-US_Report.pdf

ARISS Russia Report

The ARISS-Russia report was given by Sergej Samburov, RV3DR.

He hopes to see, soon, the completion of the Russian translation of the ARISS web pages. He has available on the pages, now, video of ARISS educational activities.

The hams at Kursk University are working very closely with Sergej, in particular on SuitSat-2. Russia continues to schedule some ARISS school QSOs, and gets articles published in Russian ham radio media outlets, and trains astronauts.

ARISS Japan Report

The ARISS-Japan report was presented by Keigo Komuro, JA1KAB.

With Koichi Wakata, KC5ZTA, on board the ISS, more Japanese schools have been scheduled more quickly than they had been previously.

To view the Japan reports, see:

[http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/05_2009_ARISS_Presentation - Japan.pdf](http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/05_2009_ARISS_Presentation_-_Japan.pdf)

And:

[http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/05_ARISS_QSO-Time_rqrd_fm_App_to_QSO \(last 3 yrs\) 090610.xls](http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/05_ARISS_QSO-Time_rqrd_fm_App_to_QSO_(last_3_yrs)_090610.xls)

Operations Committee

The ARISS Operations Committee report was summarized by Keith Pugh W5IU, who led this committee for six months.

See: http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/07_ARISS_OPERATIONS_REPORT.pdf

Keith found a way to extend ARISS QSOs. He worked with students at one of his area schools during an ARISS school QSO held elsewhere, and he had his local students simulate asking the “real” school’s questions, and this simulation allowed his students to get a feeling of how exciting ARISS and ham radio can be.

The ARISS Team thanked the SSTV team for reviewing the 2,000 images from Richard Garriott’s flight before the images were allowed to be posted live.

Rosalie gave a solicitation, asking people to consider volunteering for a six-month stint as ARISS school scheduler.

The Boy Scout Hq ARISS application for JOTA 2009 is currently being reviewed for participation by the Italian hams for JOTA, also.

A round of thanks was given for Carol Jackson’s work.

The ARISS Operations Committee report continued with Sergej Samburov presenting his comments about past, current and future ARISS equipment. Sergej mentioned that with two stations on board, we may need to spend more time training crews. He discussed having a little more training beyond what is done in the US to ensure there will be coordination of the two stations on board. When we have more complex equipment, we will need more crew training.

Kenneth Ransom, N5VHO, continued the report for the ARISS Operations Committee. Kenneth has used the language capabilities of crew members to shorten the hours needed to train the crew. They learn about the radio first, and then they simulate their upcoming school QSOs by operating the radios (doing a terrestrial contact) and speaking with school students.

Kenneth summarized the number of contacts the Operations Committee has supported since ARISS was first operational. The meeting thanked the crew members and the ground teams for all of their hard work.

See: [http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/06_ARISS Intl. Mtg.Jun 2009 \(operations\).pdf](http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/06_ARISS Intl. Mtg.Jun 2009 (operations).pdf)

Hardware Committee

Kenneth began the ARISS Hardware Committee Report by discussing the current on-orbit hardware, and things we might want soon. We hope to get a power adapter for the SSTV unit, and re-install the Ericsson back in the FGB. We need to determine what to do with the FT-100 units that we are not using, now that we are operating the FT-817.

Sergej suggested we use the first Kenwood radio for parts. The FT-100 was disallowed for use because its output is 100 watts – over NASA’s power limit.

Having a new HF antenna was suggested versus using the one we have, since it needs a ground. We have proposed how to make it work, but the Russians must take forward that idea.

See:

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/08_Hardware Onboard Jun 09.pdf

Lou McFadin, W5DID, reported on what would be good for moving forward with current hardware that is on board. He mentioned the three SSTV systems on the ISS (SpaceCam, MMSSTV, and the VC-H1 module).

See: http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/09_SSTV ESTEC 2009.pdf

Lou, Kenneth, and Sergej will meet to determine the best methods to solve a technical equipment issue.

Friday June 19th
ARISS-International Annual Meeting (continued)

School Outreach/School Selection Committee

A report was given by Rosalie K1STO on behalf of the ARISS Educational Outreach / School Selection Committee.

A good short discussion continued regarding how contacts are handled that are requested by the space agencies.

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/10_ARISSedrpt 2009.pdf

Public Relations Committee

Rosalie presented a report on behalf of the ARISS PR Committee.

We need a new chairman to guide work that should be done that was listed in the report, such as a template for a news release that the schools could use. It is good for schools to have a story publicized about what their schools are doing for their communities, and the sample news release should include what will be done and was already done to enhance education. We should include wording about ham radio, but wording about ARISS is not necessary and can be confusing.

To view the PR report, see:

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/11_2009 ARISS PR Report.pdf

Christophe Candebat F1MOJ had sent comments to the delegates regarding the ARISS QSL card, and Rosalie summarized these to the team. Currently, there are 1,000 cards in inventory. Each delegate will provide information to Christophe on how many cards they might wish to order and would need in one year and in two years. They will also collect

team members' ideas for what to change about the card. Kenneth can review NASA photos, and someone can review ESA photos, and then the delegates will chose what photo to use.

Project Selection & Use Committee

Lou presented the report of the Project Selection & Use Committee, which included a proposal for D-Star usage and a proposal from Kettering.

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/12_PS&U_ESTEC_2009.pdf

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/13_D-Star_review.pdf

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/14_Kettering_Univ_Exp.pdf

It is the job of the Project Selection & Use Committee to review all proposals for practicality, the educational benefit, whether the costs are being paid by someone, and so on, and to recommend to the ARISS delegates whether to have the hardware team move forward with the proposal.

Also, the ARWG finds out whether the space agencies will support the project, the crew is comfortable with the equipment/project and whether it requires a great deal of crew time. ARWG also learns if the upmass can be allowed, the safety certification can be earned, and so on.

The Japanese delegates should ask Fumio if he wishes to continue on the Project Selection and Use Committee, as he has not responded to emails.

The Canadian delegates need to replace Robin Haighton as he has asked to step down from the committee.

The committee has a great deal of work to accomplish, so each ARISS Region delegate needs to offer two (2) names for the committee by September 1, 2009. Each delegate also needs to offer for the Project Selection & Use subcommittees two or three names (some can be the same people as are named to the main Project Selection & Use Committee) by September 1, 2009. Subcommittees include packet, SSTV, HF, crossband repeater, and technical aspects for school contacts. Sub-committee members may have multiple specialties.

Lou reported on the status of SuitSat-2. We need volunteers to assist with educational activities related to SuitSat-2. Each delegate needs to offer a person to help with things such as adding to the SuitSat web site a list of educational resources, diagrams and explanations on how SuitSat-2 works, activities involving study of what the telemetry is showing us, how to track the suit, explanation of Doppler, what the cameras are seeing, information on the Kursk experiment, uploading our lesson plans and any other education-related topics, how students might change the design if they could, and so on.

Sergej and Lou displayed SuitSat-2 hardware. A discussion will continue on the best ways to finish the hardware project. Mark Severance will facilitate that.

See SuitSat report:

http://www.amsat.org/amsat/ariss/Meetings/2009_ESTEC/Presentations/15_Suitsat_2_Rev_June_09.pdf

The team discussed moving current on-board equipment into the Columbus module. We will have to re-certify the Ericsson with a test of end-to-end connectivity, but this could be completed fairly quickly. This would be a test of the Ericsson and a power supply (Cobalt bricks and an adapter and adapter cable) for using the USOS power. It may be difficult to get Cobalt bricks. The black brick may be more appropriate. Moving the Kenwood to the Columbus module will require more testing because we have few notes on the EMI testing, as it was done in Russia. Safety certification of the Kenwood D-700 would take much longer than the Ericsson.

We want voice capability early on for the Columbus, and we would want a special QSO for ESA to celebrate this capability. For SSTV, we could transmit images we have in storage, but we cannot do that until there is a computer and a crew member who enjoys SSTV – or design and manifest a battery eliminator to use with the VC-H1. There is no window in Columbus so SSTV images would be limited to those on a computer (and we don't have a computer) or VC-H1 images of the inside of Columbus (these become boring after a short while).

Sergej reiterated his concern for damaging the radios with two crew members operating at the same time. We could have signs to coordinate operating times, ensure there is training, have flight rules and a daily summary of what operations are scheduled, or even have an interlock if necessary, or how to leave the radios set when the crew stops operating the radio. The VHF radio could be dedicated to voice only, for instance, in one module, and the UHF can be dedicated to SSTV only or voice UHF QSOs, for instance, in the other module. The team can discuss this further as we know what we will decide to install in the modules. We need to plan on having a decision in the next two weeks because the STS-129 mission when the antennas will be installed will be in November or December. It was decided to have someone (Lou most likely) perform a study to see if there could be damage from operating both radios at the same time.

The delegates voted to have both the VHF and UHF Ericsson radios and the packet module implemented in the *Columbus* module (pending verification of electromagnetic compatibility), and the delegates will ask team members to give input on multi-operation by crew members, and to study future hardware to implement on that module.

The delegates voted to accept the recommendation of the Project Selection & Use Committee to reject the D-Star proposal as written.

Next ARISS International meeting

A discussion ensued on where to meet in 2010. NASA Johnson Space Center ISS Program Office and Education Office has proposed to host a meeting in autumn or possibly the second half of October 2010, and avoiding the AMSAT Symposium.

Portugal and Rome has proposed to host meetings in the future. All of these proposals will be studied by the delegates.

Gaston reminded attendees to please wait to publicize the notes, comments, photos, and video of what took place at the meeting. The aim is to have the meeting minutes sent to the delegates within a month, and to have the action items available in one week.