

ARISS International Meeting

October 11-13, 2004

Crowne Plaza National Airport Hotel, Arlington, VA

Attendees:

Frank Bauer, KA3HDO	ARISS Chairperson, AMSAT-NA, US ARISS delegate
Gaston Bertels, ON4WF	ARISS Vice Chairperson, UBE
Rosalie White, K1STO	ARISS Secretary-Treasurer, ARRL, US ARISS delegate
Robin Haighton, VE3FRH	AMSAT-NA, Canada ARISS delegate
Keigo Komuro, JA1KAB	JARL, Japan ARISS delegate
Sergej Samburov, RV3DR	Russia ARISS delegate
Carlos Eavis, G0AKI	RSGB, Acting Europe ARISS delegate
Graham Shirville, G3VZV	AMSAT-UK, Acting Europe ARISS delegate
Mark Steiner, K3MS	US ARISS team, deputy to Frank Bauer
Lou McFadin, W5DID	Chairperson & US member, Hardware Committee
Kenneth Ransom, N5VHO	US ARISS team, liaison to Johnson Space Center
John Nickel, WD5EEV	US ARISS Ops Team, School Operations
Jim Heck, G3WGM	AMSAT-UK
Charlie Sufana, AJ9N	US ARISS Ops Team
Dave Taylor, W8AAS	US ARISS Ops Team, Crew Training
Howard Ziserman, WA3GOV	US ARISS team
Perry Klein, W3PK	US ARISS team
Rick Lindquist, N1RL	ARISS PR Committee
Bob Bruninga, WA4APR	US ARISS team, hardware
Scott Stevens, N3ASA	US ARISS team, PR Committee
Dick Daniels, W4PUJ	US ARISS team
Keith Pugh, W5IU	US ARISS team
Carol Jackson, KB3LKI	US ARISS team
Carroll Swain, W7DU	
Harry Yoneda, JA1ANG	
Emily Clarke, W0EEC	
Gould Smith, WA4SXM	
Ron Walther, W7AI	
Cliff Buttschardt, K7RR	
Iain McFadyen W4/G4JMM	
Mikhail Malyshev, interpreter	

(Gaston Bertels attended parts of the meeting via teleconference)

Agenda:

Saturday October 9, 2004 – an ARISS forum at the AMSAT Symposium

1:00-2:00 Amateur Radio on the International Space Station (ARISS)
International Delegates Panel Session

See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/Saturday_Panel_Session

Monday October 11, 2004 – first day of ARISS Meeting

Morning

- 9 am-noon ARISS Meeting, Alexandria
- 9:00-9:20 Introductions and Welcome, All
- 9:20-9:40 Election Results, Robin Haighton, VE3FRH

International Team Reports

- 1 9:40-10:10 ARISS Europe Report, Gaston Bertels, ON4WF
- 2 10:10-10:40 ARISS Canada Report, Robin Haighton, VE3FRH
- 10:40-10:50 Break
- 3 10:50-11:20 ARISS USA Report, Frank Bauer, KA3HDO & Rosalie White, K1STO
- 4 11:20-11:50 ARISS Russia Report, Sergey Samburov, RV3DR
- 5 11:50-12:20 ARISS Japan Report, Keigo Komuro, JA1KAB

Lunch noon-1pm Lunch

Afternoon

- 1 pm-5 pm ARISS Meeting, Alexandria

Committee Reports

- 6 1:15-1:30 Public Relations, Ken Pulfer, VE3PU, Scott Stevens, N3ASA
- 1:30-2:00 Administrative Committee
 - 7 a) QSL Card status, Rosalie White, K1STO
 - 8 b) 3rd party traffic, Rosalie White, K1STO, Larry Agabekov, N2WW
- 2:00-3:00 Hardware Committee
 - a) On-Orbit Hardware Status, Sergey Samburov, RV3DR, Kenneth Ransom, N5VHO
 - 10 b) Hardware Development Status
 - 1. Phase 2 Hardware, Lou McFadin, W5DID, Sergey Samburov, RV3DR
- 3:00-3:15 Break
- Hardware Committee (Continued)
 - b) Hardware Development Status (Continued)
 - 2. MISSE-5/PCSAT2, Bob Bruninga, WB4APR
 - 3. SSTV, Miles Mann, WF1F
 - 4. Columbus Module Antenna System Status, Gaston Bertels, ON4WF
- 14 4:15-4:30 School Outreach/School Selection, Rosalie White, K1STO

Tuesday October 12, 2004

Morning

9 am-noon ARISS Meeting, Alexandria

Committee Reports (Continued)

- 9-10:30 Operations Committee
- 15 a) School Group Operations, John Nickel, WD5EEV, Tim Bosma, W6MU
 - 16 b) General Operations, Kenneth Ransom, N5VHO
 - 17 c) Crew Training, Dave Taylor, W8AAS, Sergey Samburov, RV3DR
 - d) Astronaut & Cosmonaut Licensing, Kenneth Ransom, N5VHO, Sergej Samburov, RV3DR, Gaston Bertels, ON4WF

10:30-10:45 Break

- 10:45-12:00 Project Selection & Use Committee, Lou McFadin, W5DID Moderates
- 18 a) Overview, Lou McFadin, W5DID
 - 19 b) Fast Scan Television Proposal, Graham Shirville, G3VZV
 - 20 c) VOIP Status, Scott Stevens, N3ASA

noon-1pm Lunch

Afternoon

1 pm-5 pm ARISS Meeting, Alexandria

- 1:00-2:00 Project Selection & Use Committee Continued, Lou McFadin, W5DID Moderates
- 22 d) Ionospheric Research, Lou McFadin, W5DID
 - e) Russian External Satellite Concept, Sergey Samburov, RV3DR
- 2:00-2:15 Financial Discussion, Robin Haighton, VE3FRH
- 23 2:15-3:45 Moon, Mars and Beyond, Group Strategy Session, Frank Bauer, KA3HDO Moderates
- 3:45-4 pm Break
- 24 4:00-4:30 2005 Meeting Plans, Frank Bauer, KA3HDO
- 4:30-5:00 Final Discussions and Closing of ARISS Meeting, All

Meeting Minutes:

Frank welcomed everyone to the October 2004 ARISS International Meeting. He reviewed the meeting agenda before asking attendees to introduce themselves.

Delegates not able to attend were Gaston Bertels (except for part of the time via teleconference), Ken Pulfer, Masanobu Tsuji, Jorg Hahn, Alberto Zagni and Larry Agabekov. Frank announced that ARISS Europe had given voting rights to Graham and Carlos for this meeting. A card was circulated and signed to send to Daniel Lamoureux, wishing him a speedy recovery for his hospital stay.

ARISS Elections

First meeting agenda item was election of officers. Robin reported that many people sent nominations, but that the nominations were all the same, and were as follows: Frank Bauer as Chairperson, Gaston Bertels as Vice Chairperson, and Rosalie White as Secretary-Treasurer. Robin asked for a vote approving all three nominations, and the vote carried unanimously.

ARISS Canada Report

Robin presented the ARISS Canada Report on behalf of himself and Ken Pulfer. The report listed members of the Canadian team and their responsibilities, plus a few news items. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/02_ARISS_Canada_Report.pdf

ARISS Japan Report

Keigo gave the ARISS Japan Report, listing successful school QSOs. The list also showed how many days have passed from the time the school submitted an application to the time their QSO was completed. He thanked the Japanese team for their excellent work. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/05_ARISS_Japan_Report_Time_rqrd_fm_App_to_QSO.pdf

ARISS Europe Report

Gaston was linked in by telephone in order to share the ARISS Europe Report. He spoke about recent educational events, and about Ireland being chosen for the second 2004 ESA educational event -- all Irish schools are invited to participate. Gaston worked with Sergej to arrange with Energia to set up two QSOs for schools with taxi flight cosmonaut Yuri Shargin. One QSO is with a high school in Finland and one is with students visiting a science exhibition in Belgium. The ARISS Team will be working with both the Russian and US Mission Control Centers for these two QSOs.

Gaston explained that Danny Orban is being assisted by Pawel Kabacik in designing the *Columbus* module antennas. We still have the issue of paying for the installation of the feedthroughs on the *Columbus* module, along with the cost of coax cables and antennas. ESA is paying 50000 Euros, which is half of the cost. AMSAT-NA hopes to raise 10000 Euros. Belgium plans to give 5000 Euros. Graham asked about getting a paper on the benefits for the project in order to help us to more easily ask for donations (later that day, Gaston forwarded this document).

Gaston and Sergej hope to work on scheduling more QSOs when Sergei Krikalev, U5MIR, is on-orbit, so we will need to forward information to Energia about the (hopefully) successful upcoming two QSOs that Yuri does. Sergej will probably be

planning Krikalev's activities, and will ask Energia for 4 QSOs per month. Sergej was thanked for assisting ARISS in continuing with school QSOs. Russia plans QSOs for every taxi flight, and Sergej will ask to make these activities official Expedition events. He needs help in preparing paperwork to accomplish this. It was reported that the 50th anniversary of Sputnik is in 2007. Arianespace is planning to launch 50 nanosats in a historic mission. Each nanosat will have about a two-year life span, and will contain a scientific experiment – see:

http://www.arianespace.com/site/news/releases/04_10_6_release_index.html It is our understanding that these 50 payloads will ride on the first Soyuz launch from Kourou. The nanosats will stay attached as a group to the upper stage as a single object and share power, telemetry and data communications.

To view the ARISS-Europe report, see:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/01_ARISS_Europe_Report.pdf

ARISS Russia Report

The first portion of Sergej's ARISS Russian report covered a proposed commemoration of the 175th anniversary of the founding of the Bauman Moscow State Technical University. The anniversary would be commemorated by launching a special satellite. Cargo space on the ISS has reached a critical stage because of old, outdated equipment, and this includes several Russian Orlan EVA spacesuits. ARISS Russia would turn one spacesuit into a satellite for the commemoration. These suits are pressurized, thermally protected, and could have a ham radio installed, and be cosmonaut-deployed for satellite operation. The suits are already on board the ISS. The radio would have to be upmassed, installed, tested by August 2005 and be fully operational by Expedition 11 in November 2005. Another suit will be ready to work with in 2007, if we are successful with the first suit.

Possibly a Web camera could be installed in the helmet, and this could record plasma sightings as the suit re-entered. The suit would float in space before de-orbiting in less than 3 months, although spare battery packs onboard ISS might be installed to lengthen the time in space. We might install solar cells on the back of the suit. We would need communications capability to monitor telemetry from inside the suit. A beacon could be installed to track how far from the ISS communications can be maintained. We need to learn the suit's cooling system to find out power draw, and if it is too much, we might need a fan installed. Width and depth of the backpack are each 40 centimeters. The ARISS Team felt that such a satellite project should catch the interest of kids, schoolteachers and the media. The delegates gave approval for the Project Selection & Use Committee to continue studying the spacesuit satellite project, and delegates said the committee should ensure that costs will be as low as possible and that the technology to be used is simple for the 2005 mission due to the short time in which this all would have to be accomplished.

Sergej's report continued with a discussion on our hopes of sending a dedicated ISS ham computer, for the first time, to the ISS. He also shared updated information on the Yaesu FT-100 HF equipment, and said that the Russian license for ISS has been extended to

2009. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/04_ARISS_Russia_Report.pdf

ARISS US Report

The ARISS US Report was given by Frank, who showed slides listing names and titles of team members and the eight teleconferences that are regularly scheduled. The team has had conversations with NASA who is requesting an expansion of program outreach. Expansion ideas that have been started or completed include weekly status reports to NASA and the ham radio community (many of the news items are forwarded to the highest NASA officials), a NASA lithograph (completed and being circulated), and additional school lesson plans, which are in the works.

Other expansion ideas being discussed include school group collaboration through a listserv and possibly teleconferences, ways to shorten the queue for school QSOs, more involvement by the NASA Aerospace Education Program team who do outreach, more terrestrial QSOs, a new NASA Web site for ARISS, and magazine-type articles generated by ARISS for the NASA Web site. Some things on the list will require additional support from NASA. We would have a team for working on the Web site. We have to find ways to get better audio, photos and data, and we must get releases for all photos. (In England, their laws state that releases must be in hand *prior* to taking photographs).

See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/03_ARISS_US_A_Report.pdf

A discussion was held on the need for a lesson plan that explains how radio is involved when the ARISS team has to use the telebridge system.

For our aging queue of schools, each region could decide if they need a competition for selecting schools. We should grandfather all older schools if we can ensure they are still a viable school. Some schools may prefer doing a slow scan TV or terrestrial QSO rather than an on-orbit QSO. Another suggestion was to consider a school day for a handful of schools who use the ARISS repeater with a discreet frequency to talk to an astronaut on the ground. The educational outreach team and the ops team need to discuss some of these ideas.

Keith Pugh was asked to convert for ARISS, the plans he used when he worked with a school that was learning about *Mir*.

ARISS PR Committee

Scott presented the PR Committee Report; Ken Pulfer is in Geneva working to help protect Amateur Radio frequencies. Scott releases an announcement to hams prior to school QSOs, and also sends information on the LM Net, a school library email list. Thanks go to Rick Lindquist for writing stories for each QSO. Thanks go to Satoshi for audiovisual items and to Gaston for stories from the European QSOs. The PR Committee

encourages schools to provide audiovisual items to Rick, and hopes we can have a person at each school site to help with this. The PR Committee hopes to find ways to get the attention of national media outlets. More people are needed to augment the PR activities.

See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/06_PR_Committee_Report.pdf

ARISS QSL Card Report

Rosalie spoke on the status of the QSL card to be updated. Based on inventory supplies in each region, it is time to get final ideas for an updated card. The delegates narrowed the photo choice to 3 options, which will be circulated for a final vote. Rosalie asked that final comments on changing the text be sent to her as soon as possible. When the card photo and text are finalized, European and Russian team members will get bids on costs for printing and shipping QSL cards. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/07_QSL_Cards.pdf

For QSL Photos, see:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/QSL_Photos

Third Party Report

Rosalie gave a talk about what has transpired on third party topics. Several ARISS team members worked on a letter that was translated into Russian for the Russian Telecommunications Agency. ARISS asked for an interpretation in writing from the agency of its third party rules that we will apply to operations on Expedition 11. The agency responded verbally with a positive response, and we are waiting to get the response in writing. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/08_3rd_Party_Traffic.pdf

ARISS Hardware Committee Report

Kenneth, Sergej and Lou presented the Hardware Committee Report. Sergej spoke about trying out the new antennas; meantime we are experimenting with packet and the repeater. Lou talked about the Phase 2 hardware status. Open items include RF cables that NASA will accept, and several items for the FT-100, for the power switching assembly and for the SSTV Module. SSTV software needs to be manifested. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/10_Phase_2_Hardware.pdf

Bob Bruninga gave an update on PACSAT2 (MISSE-5), which we hope will be attached to a handrail on the ISS. He said when we have a full duplex crossband FM voice repeater for the ISS crewmembers, we may be able to eliminate some of the school QSO backlog.

Regarding Sergej's spacesuit proposal, Bob suggests a radiation sensor to be included, along with a plug-and-play, text-to-speech voice synthesizer that can speak to the students. Frank suggested that we might review the German digi-talker project as a potential capability. Graham added suggestions about having graphic display on location height and speed, pressure, temperature, voltage, current, etc. We will need a team to work on this project. Robin pointed out that it is a short-term project that the Project Selection & Use Committee felt is a good one, and that the delegates should vote now. The delegates gave approval for the project team to move forward, and should ensure that costs will be as low as possible and that the technology to be used is simple for the 2005 mission. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/22_SPUTNIK-05_Samburov.pdf

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/22_Suitsat_Bruniga.pdf

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/22_Suitsat_Shirville.pdf

Graham and Gaston prepared a list of facts that we could use when soliciting money for the *Columbus* module's feedthroughs, cables and connectors. Team members should think of groups to solicit for funding, and use items from this list when asking for money. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/25_ARISS-Europe_News_13-10-04.pdf

ARISS Educational Outreach/School Selection Committee

Rosalie gave a listing of topics that the ARISS Educational Outreach / School Selection Committee has discussed since April. A major issue is how to deal with the schools that have been waiting for two years and longer for a QSO. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/14_School_Outreach_Selection_Committee.pdf

ARISS Operations Committee

John reported on the school operations portion of the ARISS Ops Committee report. We have a backlog of old applications from many US schools and some Canadian schools. We have enough school applications to cover a time span that will last until 2007. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/15_School_Operations.pdf

Kenneth talked about the general operations portion of the ARISS Ops Committee report. We need to get the Ericsson 70 centimeter equipment unstowed and operational. We expect to get the SSTV equipment into space, along with the Yaesu FT-100, during 2005. We also anticipate that PCsat2 will be launched on the next Shuttle flight. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/16_General_Operations.pdf

The team discussed what we might do in the way of a certificate or presentation to thank each crew for all of the ARISS work that they do. We will soon be asking for good photos from the schools, and possibly a montage could be made from those.

Dave and Sergej covered crew training activities done by the ARISS Ops Committee. Training for USA ham licenses is performed by Nick Lance. Other training done includes how to operate the equipment and becoming familiar with on-orbit manuals and procedures for school QSOs, general QSOs and emergency QSOs (how crews can communicate with us if there is an emergency). Keigo suggested that all crew members, whether licensed or not, should know how to use the equipment in times of emergency in case the licensed crew member is incapacitated.

Dave played an online training video he developed that demonstrates how to use some of our equipment. Sergej is writing a letter to GCTC about crew training for the HF equipment. He works with crews on how to initiate a QSO when many stations are calling at the same time. Robin suggested that crewmembers will need to know how to operate when two stations are functioning at once; Kenneth reported that the committee has already begun planning for this. They are also planning on how onboard batteries might be used if there is an ISS power problem. Sergej said that crewmembers are categorized as expert, specialist operator and user, and they are trained for exactly what they each can and cannot do. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/17_Crew_Training.pdf

To view video, see:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/17_Crew_Training_Video_PM1.avi

Kenneth and Sergej reported on astronaut and cosmonaut licensing. Energia's engineer astronauts are all licensed; there is currently a new and large group of these engineers in training. For Expedition 12, astronaut Bill McArthur is licensed and ready to operate NAISS. For Expedition 13, Christopher Fuglesang is licensed. School QSOs are our most important activity, and these require at least a USA Technician license, but we plan to do HF training for crewmembers who have higher licenses or who want to upgrade. Russia's training for crews covers some familiarization of HF and those particular radio functions.

Graham played a very fine video done by the Back School of their QSO with Mike Foale.

ARISS Project Selection & Use Committee

Lou gave a presentation for the Project Selection & Use Committee; Mike Miller has left the committee due to other commitments. The committee is working with the spacesuit

project, the Shadow Project (plasma measuring experiment), the ionospheric experiment, and digital ATV and compressed ATV. The committee has not received any follow-up proposal that answers questions asked of the people working on the ionospheric project. The committee has not heard much from the group doing the Shadow project, but when they are further along in developing their hardware, we assume they will talk to Sergej, who can pass information to the Project Selection & Use Committee and the PR Committee. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/18_PS&USummaryOct04.pdf

Graham's and Miles' teams have worked together to develop a proposal for ATV – there are many issues to consider, including ITU band limitations (1.2 Ghz can't be used for downlink on the ISS), size of antennas may be too big for the ISS, and other possible problems. The benefits of a DATV system, including one for 2.4 Ghz, were reviewed. Graham proposed a tentative link-budget for a DATV project. Because of the low link margins, this project will continue to be studied by the PS&U Committee, who will continue to review project ideas and the link-budget in an effort to improve budget margin. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/19_ATV_on_ISS.pdf

And see:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/19_DATV_on_ISS.pdf

At an upcoming delegate teleconference meeting, delegates should discuss guidelines and delineate criteria required for the appropriate time that a project proposal is to be moved from the Project Selection & Use Committee to the Hardware Committee.

Scott gave a report on VOIP, including the differences between EchoLink and IRLP, and how it would be useful to have both for ARISS. Project members note that using EchoLink/IRLP would expand the ARISS QSO audience. For IRLP, volunteers would supply hardware and Internet connections, the software is free, no training is needed for the ISS crew, but ground crew training would be needed. Both EchoLink and IRLP have been demonstrated for audiences. The IRLP demonstration resulted in an issue – repeaters were timed out by persistently-streamed audio -- and the IRLP group will work on resolving this. An IRLP presentation by the team will be done soon for ARISS delegates and ARISS teams.

We need to move forward with a standard method of VOIP because several groups are already going in different directions with it. We could be using EchoLink now, although only one side of the QSO audio is heard by the schools. This is the same for IRLP. We need to find one person to lead the VOIP effort if each group is to continue to progress. Both groups need to work on developing feeds from QSO-to-point-of-redistribution. That involves connection equipment and a how-to on implementation process. We'll need a team of ARISS volunteers to verify secure users who won't interfere with the QSO. We need to get audio feeds from all schools with QSOs, rather than only being able

to do this activity for schools that have telebridge QSOs. We could provide both sides of the streaming audio and give the school a phone number for this audio. Scott thanked the Canadian team for their hard work on the project, and Lou for his assistance.

The IRLP has taken part in teleconferences with the Ops Team. Scott will ask the IRLP team to send their presentation electronically to John, Lou and Frank, and these three will determine what audience should view it next. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/20_VOIP_ISS_Link.pdf

Lou presented a proposal from Herb Sullivan, K6QXB, and Al Bloom, N1AL, for the Russian External Satellite Concept. These two hams suggested several things, such as, that the sensor should be pointing toward the head or the foot of the space suit, and this could be a motion IR sensor. See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/22_Suitsat_Sensor_Sullivan.pdf

Financial Discussion

Robin spoke about finances and reminded us that some regions contribute a substantially higher amount of money than other regions. It makes it difficult for a representative of one ARISS volunteer group to defend the amount of money spent on ARISS to its Board of Directors and membership, when other ARISS volunteer groups don't contribute nearly as much. Some groups provide money, some provide in-kind funding, and others have garnered equipment donations that ARISS needed. Much of the outreach to and from NASA and Energia has to be done by North America and Russia, so it can be easy to think these two regions should provide a larger amount of money. All regions provide volunteers as sweat equity. North America provides many, many volunteers that have grown in number because of the region's longer involvement in Amateur Radio in space. Europe, Japan and Canada are building up their corps of volunteers. For Gaston's funding needs (*Columbus* module), the deadline is nearing; it would be very helpful if hams would send a formal letter to their IARU and AMSAT society to request money.

Moon, Mars and Beyond, Group Strategy Session

Frank presented a discussion on the new Moon, Mars and Beyond initiative, and some beginning thoughts on an ARISS strategy. NASA is transforming its work to meet the objectives of this new initiative – it is very important to them. NASA Hq's education office has asked Rosalie and Frank to develop tentative plans/ideas for the role of Amateur Radio in this exploration initiative. Frank was on the NASA team to develop NASA requirements and flesh out architecture for the initiative, and he is now on the Strategic Roadmapping Team for Lunar Exploration. ARISS must have our report turned in by June 2005.

Crew exploration vehicles will be small, so our equipment must be small. An issue is long path lengths. There will be ground-based items, and lower orbit items. ARISS must

show that our plans are for something crucial or at least beneficial to NASA, and it should be something that aids with crew psychological support, education, and community outreach. We can offer a superb worldwide team. If NASA develops an educational item, we could work with it, mentor schools, manufacture kits, etc. We are quite unique and we have multiple things we can provide. We know how to miniaturize things. We have technical savvy. We have savvy to market technical programs to hams *and* non-hams. We know how to inspire students to want to become scientists, technicians, mathematicians, and so on.

There will be a NASA comm system in place, so our beneficial communications projects would need to be of interest to people besides NASA – maybe providing something like Radio Jove or AMSAT-DL's repeater, or something to study HF propagation on Mars, or weather stations that relay data to Earth. We might look toward working with Mars societies around the world plus government-funded science project teams. We could have continuous experiments for students. But we have to remember it is the astronauts who interest the students the most, rather than the equipment or activities. Our "box" should be multi-functional so that we can offer many things. We can offer "mostly free" benefits. We could have remote-controlled things for students. We should think about whether we have to protect our frequencies in space.

We should remember that the astronauts say they enjoy talking to people and having fun (doing general QSOs) besides only talking to scientists and space agency personnel. Schools can't receive signals from Mars, but we might have a distribution system for schools' dishes. We might consider a camera for automatically downloaded pictures that could be picked up by the general public, or telemetry that could be decoded by anyone. We should develop our ideas and then talk to NASA people, and as we meet with them, also learn their interests. Whatever we wish to consider, we need those ideas now so we are in on the ground floor! See:

http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/23_ARISS_Exploration_Initiative.pdf

Next ARISS Meeting

For ideas on our next meeting, Frank developed a list of comments. First, our many teleconference meetings are very effective, resulting in not needing as many in-person meetings other than to know what each committee is doing. In the past years, we needed more team building, and now we have good teams. Our teams have grown, and it is difficult to coordinate everyone's schedules in order to select a date for in-person meetings. Travel costs are hard on all of our ham societies. When 15 months passed by without a meeting, though, some things did not progress smoothly. A 6-month time span between meetings, though, is too short.

Frank recommended an international in-person meeting once each year, with technical interchanges as needed during the year. The delegates voted to have an in-person ARISS International delegates meeting once per year. The delegates also agreed that this meeting schedule makes it even more important for the committees to report progress at

monthly ARISS-international teleconference meetings, and to suggest when they will need a technical interchange meeting. (Delegates are welcome to attend technical interchange meetings.) ARISS-Europe will study and report on hosting an ARISS 2005 in-person meeting in conjunction with the AMSAT-UK annual meeting; travel funds for Sergej would have to be raised. All team members are requested to suggest their ideas for a meeting location for both 2005 and 2006. See: http://www.amsat.org/amsat/ariss/Meetings/Arlington2004/Presentations/24_FutureMeetingPlansBauer.pdf

Thanks

The ARISS Team thanks Scott Stevens for his work during the meeting with the speaker system. The ARISS Team thanks Carol Jackson for taking care of so many important details for our meeting. ARISS thanks Mikhail Malyshev for his work as interpreter for Sergej. Robin asked that the team also thank Rosalie for her work as secretary. [Applause for all.] Warm wishes were shared with everyone; we work so well as a worldwide team.

Action Items Team Members have Accepted:

- * At an upcoming delegate teleconference meeting, delegates should discuss guidelines and delineate criteria required for the appropriate time that a project proposal is to be moved from the Project Selection & Use Committee to the Hardware Committee.
- * Sergej hopes to work with the ARISS operations team on scheduling more QSOs when Krikalev is on-orbit, and we will need to forward information to Energia about the (hopefully) successful upcoming two QSOs that Yuri does.
- * Sergej will be planning Krikalev's ham radio activities, and will ask Energia for 4 QSOs per month.
- * Russia plans QSOs for every taxi flight, and Sergej will ask to make these activities official Expedition events. He needs help in preparing paperwork to accomplish this.
- * A discussion was held on the need for a lesson plan that explains how radio is involved when the ARISS team has to use the telebridge system.
- * The ARISS Educational Outreach / School Selection Committee and the ops team need to discuss some of the suggested ideas for handling the backlog of old school applications.
- * The delegates narrowed the choices to three for the photo for the QSL, these will soon be circulated for a final vote. Final comments on changing the text need to be sent to Rosalie as soon as possible.

- * Sergej is writing a letter to GCTC about crew training for the HF equipment.
- * The IRLP has taken part in teleconferences with the Ops Team. Scott will ask the IRLP team to send their presentation electronically to John, Lou and Frank, and these three will determine what audience should view it next.
- * One person should be named to head the VOIP coordination team. Also, one person will be designated the lead of the IRLP team and another person to head the EchoLink team.
- * We need to develop an audio box to get audio feeds from all schools with QSOs, rather than only being able to do this activity for schools that have telebridge QSOs. We could provide both sides of the streaming audio and give the school a phone number for this audio.
- * For Gaston's funding needs (*Columbus* module), the deadline is nearing; it would be very helpful if hams would send a formal letter to their IARU and AMSAT society to request money.
- * ARISS team members should develop ideas about the Moon, Mars and Beyond initiative. Whatever team members wish to consider, those ideas are needed now so we are in on the ground floor!
- * ARISS-EU will look into and report on hosting a meeting in conjunction with the AMSAT-UK annual meeting, although funds for Sergej to travel would have to be raised.

Items Voted on by ARISS Delegates

- * Robin reported that many people sent nominations, but that the nominations were all the same, and were as follows: Frank Bauer as Chairperson, Gaston Bertels as Vice Chairperson, and Rosalie White as Secretary-Treasurer. Robin asked for a vote approving all three nominations, and the vote carried unanimously.
- * The delegates gave approval for the Project Selection & Use Committee to continue studying the spacesuit satellite project, and delegates said the committee should ensure that costs will be as low as possible and that the technology to be used is simple for the 2005 mission due to the short time in which this all would have to be accomplished.
- * The delegates voted to have an ARISS International delegates meeting once per year.
- * The delegates agreed that with a yearly annual meeting schedule, it is very important for the committees to report progress at monthly ARISS-international teleconference meetings, and to suggest when the committee will need to have an in-person technical interchange meeting. (Delegates are welcome to attend technical interchange meetings.)

* Graham proposed a tentative link-budget for a study for a DATV project; the committee will continue to work on project ideas in an effort to improve budget margin. The DATV project is still in PS&U Committee.

* The IRLP has taken part in teleconferences with the Ops Team. Scott will ask the IRLP team to send their presentation electronically to Scott, John, Lou and Frank, and these three will determine what audience should view it next.

Respectfully submitted,
Rosalie White, K1STO
ARISS Secretary-Treasurer