

ARISS International Annual Meeting

Foster City, CA

Oct 9-10, 2006

Attendees:

Frank Bauer, KA3HDO
Roslie White, K1STO
Sergey Samburov, RV3DR
Robin Haighton, VE3FRH
Masanobu Tsuji, JH2PRZ
Graham Shirville, G3VZV
Mark Steiner, K3MS
Kenneth Ransom, N5VHO
Carol Jackson, KB3LKI
Charlie Sufana, AJ9N
Dave Taylor, W8AAS
Miles Mann, WF1F
Rick Lindquist, N1RL
Steve Bible, N7HPR
Paul Shuch, N6TX
Lou McFadin, W5DID
Dieter Schliemann, KX4Y
Cindy McArthur
Bill McArthur, KC5ACR
Joe Julicher, N9WXU
Keith Pugh, W5IU
Lee McLamb, KU4OS
Ian MacFarquhar, VE9IM
Tim Bosma, W6MLL
Ian Ashley, ZL1AOX
Bob Twiggs, KE6QMD
Dick Daniels, W4PUJ
Emily Clark, N1DID
George Anderson, W7ON
Perry Klein, W3PK
Bob McGwier, N4HY
Hans van de Groenendaal, ZS5AKV
Via telecon: Gaston Bertels, ON4WF

The group was welcomed to the ARISS-International Annual Meeting by Frank, and he asked attendees to introduce themselves. The agenda for the two days was summarized.

Robin reviewed how the election process had been handled, stating that nominations for the next two years had been received from almost every delegate. Robin presented the slate of names, and a motion was made to accept the slate, as follows:

Chairman Frank Bauer
Vice Chairman Gaston Bertels
Secretary Rosalie White

The ARISS delegates voted unanimously for this slate of candidates to return to office for another two-year term. [applause]

Graham presented the ARISS-Europe report; please see

http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/01_ARISS%20Europe%20Report%202006.pdf The ARISS-Canada report was given by Robin. Rosalie and Frank shared the presentation of the ARISS-US report; see

http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/02_USARISSRegionrpt_06_Final.pdf Frank thanked Bill McArthur for his prolific Amateur Radio activity during his increment on the ISS. Bill commented that it was a pleasure, and that every time he got on the air, there were many hams listening for him. Sergey gave the ARISS-Russian report. He spoke of the 1000 students at a Science and Arts conference, and future events at a special education institute. Sergey thanked Kenneth for his help with radiograms for schools. Every Saturday Pavel Vinogradov asked Sergey to be at MCC to help him try to get SSTV operational. The computer Pavel found was for temporary use only; it will be tied to other experiments in the future. Sergey would like the next ARISS-I meeting to be in Moscow during the week of October 4. The ARISS-Japan report was contributed by Masanobu. See http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/03_Status_report_Japan_mod1.pdf JARL will try to get the Japanese space civilian to study material in order to take his ham radio exam.

Graham reported on the status of the Columbus module. See http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/04_ARISS%20on%20Columbus%20-%2010.10-2006.pdf Just before the antennas were to be installed, ESA's vibration test was done (the test was done at 49 g, a much more difficult standard than in past tests), and the antennas failed the test with some of the foam becoming detached. A re-design of the antennas is being done. It was decided the antenna could be flat, and that will make it easier to pass this rigorous test. Meeting deadlines for building antennas before the end of the year, and then testing and installing them, will be difficult. Lou will find hams at Kennedy Space Center (KSC) or in the KSC area to assist. For QSOs with the European set-up, schools would need a 1.2-meter dish that can be steered. Graham asked Bill what he thought about crews using amateur television for QSOs, and Bill spoke about time constraints and the lengthy preparation for such QSOs, for example, if equipment has to be set up. Bill said the 2-meter equipment currently on board was in a good place on the ISS. Hardware has to be easy to operate by the crew because of their limited time. Getting storage space on the ISS for such equipment is always a problem, too. The amateur television team is debating whether video will be downlinked only, or also uplinked.

It was reported that the IARU international team has worked together during the AMSAT Symposium the past few days, on frequencies for SuitSat-2, and a plan should be drafted soon.

The Project Manager (head) of Johnson Space Center's Teaching from Space office is Cindy McArthur, and she spoke to the ARISS Team. NASA Hq decided to start sending its projects to its NASA centers. JSC had to write a proposal because they wished to oversee ARISS and Education Flight Projects. They particularly wanted ARISS, and just one of the reasons why is that her office has a partnership with the international space agencies' education offices. Cindy's participation in our meetings was so that she could learn what it takes to make an ARISS QSO a success, and to learn how her office can help us. They can help us

work with NASA Hq to do more for education outreach, to get funding, to expand our audience, and to help us get involved in programs that NASA will be participating in for the future. Her office can take its experience with ISS video downlinks and put it with our experience with ARISS, and both programs will result in stronger products.

Rosalie presented the committee report of the Educational Outreach/School Selection Committee. See:
http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/05_ARISSedrpt2006.pdf The Russian space agency has asked Sergey to schedule three contacts a month. Sergey suggested that maybe a Russian cosmonaut could speak with one of the oldest US schools each month, having the US crewmember as Control Op for the third party issues. Sergey will give the list of Russian school QSOs that have been done by the cosmonauts to Charlie for his running list of QSO successes.

Ken Pulfer's report from the PR Committee was given by Rosalie. The report is at:
http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/06_ARISS-I%202006%20PR%20Comm%20Report.pdf Rick Lindquist suggested that the team and schools should be persistent with news reporters, inviting them more than one time to the school. He says to remember to pitch the story to reporters as if they don't have any idea what ham radio is; find a way to make your story interesting to their audience. The best ways are usually about the social aspects, a particular question a child is going to ask, and maybe the education aspects. Steve Bible says Microchip's PR person, Eric Lawson, will help with PR for SuitSat-2. ARRL's Allen Pitts is somewhat involved, in that his ARRL Public Information Officers get Charlie's updates. There was a discussion about how to get more Canadian astronauts licensed. It isn't as easy to get them licensed as it is for astronauts, because the training team is at Johnson Space Center. The question was asked whether Canadian astronauts could get a Canadian license if they took the Canadian exam at Johnson Space Center. Canada might be able to send examiners to Johnson; Robin will talk to Kenneth about it.

[Ken Pulfer had these comments to add after the meeting discussion: With regard to the licensing of Canadian astronauts, from my point of view, the exams aren't the problem. It is the buy-in from CSA, primarily getting CSA to support the idea, and set aside time for the astronauts to learn what little is needed about Canadian regulations. In Canada, examiners are licenced amateurs, approved by the government. In unusual situations, RAC - Radio Amateurs of Canada -- can approve examiners as well.]

Sergey reported that there is a new Russian QSL manager. Sergey spoke about special QSL cards the ARISS Team might wish to make available, and it would be produced in Russia. These cards have crew photos of all the Expeditions, to date. On the back side of the card are the ISS call signs, the call signs of all of the crew members, information about ARISS and a photo of the ISS. Sergey felt the languages should be Russian and English, but that is to be discussed further. The card would be updated to add new Expedition crews, although the space would be filled after Expedition 15. A Russian company pays for the printing, and their logo is on the card. The question arose about whether we should have a separate QSL card manager in each region. Robin wishes

to speak with his QSL manager before we make decisions about having another card. Who would get this card and who would get our standard ARISS card? Each region needs to discuss thoughts on the special card and the topic will be on the agenda of the ARISS-I teleconference meeting.

The ARISS Operations reports were given by Sergey, Dave and Kenneth. See:

http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/07_training%20Intl%20mtg%2006_10.pdf Dave discussed licensing, operations and composing the procedures for operation of the radios, and he mentioned that Nick Lance does the training for passing the amateur exams. Kenneth discussed hardware; see: [http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/08_ARISS%20Intl.%20Mtg.Oct%202006\(operations\).pdf](http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/08_ARISS%20Intl.%20Mtg.Oct%202006(operations).pdf) Sergey added a few comments on Russian training, and in particular, that he hopes to add two more hours to the training. At some point, the team hopes to get a dedicated ARISS computer, and to try various software programs with it.

Lou called a special Project Selection & Use Committee meeting for the members in attendance to discuss proposals before giving the committee's presentation tomorrow.

There was a discussion about our frequencies. Russia has problems with using 145.80, and would use different frequencies. He wants to use the same uplinks as the rest of our team uses. Most of these frequencies are programmed into the Ericsson radio.

Tuesday October 9, 2006

The hardware status report was presented by Lou. See: http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/09_Hardware%20Onboard%20SF%20Oct%2006%20.pdf A discussion began on cables and connectors to be needed in the future. The Russian team was told not to use the connectors with plastic pieces because these are a safety hazard. The team has come up with cable inserts so that the microphone can be pulled further away from the radio's control panel. The US Team can work with the cables and connectors if Russia sends the parts to us. Russia already has the several sets of cables and could bring the pigtailed after soldering the connectors, but we should decide who does what things, now. We may not actually need a tuner, at this point.

There was a discussion on the FT-817, and its QRP capabilities. See: http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/10_7.3%20FT100%20vs%20FT817.pdf We don't have the funding to buy these radios, but we can begin discussions about the tests. We will use Russian connectors for the four Phase 2 RF cables, and Sergey may be able to find someone to bring 6 connectors (we need 2 spares) to Houston very soon. The US Team has to make adapters that allow our cables to fit the Russian connectors. We don't have a fabrication lab in Houston. There is some silver plating that needs to be done. We're looking for more flexible cable. Robin may have a spare touchtone microphone for Lou to test, and it can be tested to ensure the DTMF pair tones are right. For the power switching assembly, we need to

determine who and how to certify and test it. The US Team has 10-amp connectors available, but is looking for 3-amp connectors. The power cable for the power source could be manufactured by Energia. A cable that is one-meter long will deliver 10 amps and 8 volts, and is labeled "ham radio." The Russians use a standardized 10-pin connector. The D-700 label on the power switching box would have to be changed, and 12 cables have to be made. Low frequency power connectors need to be brought from Russia to the US Team during the next six months. Sergey asked us to remind him to send to Lou the URLs of the Russian companies who make the connectors.

The Project Selection & Use Committee will ask the ARISS-Europe team to specify what equipment, etc. it is hoped can be sent up in a year or so for the *Columbus* module. The committee will study the plan to ensure everything will be compatible with the ham radio systems that are currently on the ISS. The European team has selected a rack and a place to put it. ESA dictates what cables and connectors will be used, and the committee needs to study that information. The teams need to discuss the power to be used for TV.

Kenneth covered topics and issues on the Space Cam activity. With the new crew onboard, it is difficult to get enough time with them to troubleshoot the radios. The team will try to return the radios back to baseline settings, and that will help with troubleshooting. Some of Miles' suggestions will be used when re-loading the D-700; Kenneth is reviewing all of Miles' ideas.

Miles presented his slides; see http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/11_0%20SpaceCamStatusARISS2006.pdf He reported that when Pavel did some troubleshooting, Miles thought the clock wasn't right. There were some communications gaps in the messages containing instructions for enabling the D-700. The image shut down for unknown reasons, and it will be investigated. When Sergey is back in Russia, he will spend time with Pavel to ask some questions that should help us do troubleshooting.

The Russians would like to do a KIIS test of SSTV before launch. The computer will have software uploaded; there are two different programs that can be used in different modes. Space Cam allows for a slide show, and the crew only needs to turn on that mode. Space Cam doesn't allow them to receive images at the same time, but MMSTV does. With Space Cam, the crew can see and send a high-resolution image, whereas MMSTV allows a low-resolution photo to be made into a high-resolution image.

The next presentation was the report from the Project Selection and Use Committee, which was given by Lou. See http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/12_PSandUSummaryOct06.pdf It was pointed out that not all projects have been brought before this committee, but all projects should be submitted. More meetings of the committee are probably needed. A prominent statement should be added to the ARISS site that states if someone has a proposal, it should be submitted to the ARISS delegate from the person's region, and then the delegate will bring the proposal to the committee. We could develop a simple form that can be filled out as to who the contact person is, how the project will be

funded, and other things the committee must be told. Lou's committee made recommendations for accepting or not accepting a number of proposals. His slides listed the reasons for these decisions, and for considering the FT-817.

Bob Twiggs spoke on his proposal that was brought to the committee about CubeSats and launching them. These satellites have safety requirements similar to SuitSat, and the peapod launcher tube (the Cliff Buttschardt deployer) with a velcro closure should be fine for deployment by the ISS crew. This aluminum launcher and the satellites weigh 3 kilograms. The launcher could provide proper deployment with proper velocity versus deploying by hand by the crew; it is easy to calculate velocity needed for the shot. CubeSat antennas are folded down and open after exiting the launch tube. The Russian safety people may have outgassing concerns, plus ones regarding the direction of launch -- two closures would be needed to meet the latter issue. The satellites would be loaded before a space walk into a launcher tube to prevent issues about sharpness of edges of the CubeSats. We know radios must not transmit until a certain point after deployment. The FCC doesn't like satellites in 800 km orbits; NASA doesn't like long-term space debris, and prefers satellites at space station altitudes. So both organizations may look favorably on CubeSats being launched from the ISS. The shuttle will be out of service in a few years, and we won't be able to deploy from it. The CubeSat group would find funding for the launcher and the launch. Time in orbit of the CubeSats could be 1 month to 1 year. There could be 3 satellites launched per deployment, and possibly more than one deployment per Expedition. Competitions for kids could be set up over several years. We want to share Bob's proposal ideas with the JSC Education Office, and all of our worldwide space agencies. The PS&U will review the proposal quickly. See:

http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/13_CB%20CubeSat%20ISS%20Deployment.pdf

The next proposal was to make corrections to the WA4 antenna; see http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/14_HF%20Antenna%20Oct06.pdf The clamp and the rail are well insulated (which we didn't know in earlier years), and this prevents the grounding that we need. The plate doesn't act as a ground on the lower frequencies. Lou is concerned about the standing waves on the cable, and there's not a good way to put a tuner near the antenna, and additionally, an extra element would still be needed. Energia might fabricate the extra element based on the team's prototype. An SWR meter was sent to the ISS by a Russian group, and they may allow us to use it to test WA4. Space Civilian Charles Simonyi has asked Space Adventures if he could be given a task to do during a space walk, and we might ask that he do our work. There will be a safety issue to resolve with the extra element, and maybe the Russian EVA team can determine how to attach it. Charles Simonyi has told the Russians he is interested in being trained and licensed as a ham.

Another proposal, see

http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/15_-1%20IcomID800Project.pdf, is to think about replacing the D-700 with some other radio because before too many years, we will need to get a new radio certified and tested. We can send a back-up unit if the D-700 needs to be replaced, but at some point in the more distant

future when we have a compelling reason, we will need a proposal on what radio should replace the D-700.

The proposal about a packet upgrade can be seen at http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/16_0%20packetupgradeproject4.pdf. The D-700 doesn't always acknowledge packet mail (this mode was considered an add-on feature when the team chose the D-700). The D-700 was to be used for packet if the Ericsson fails. The Ericsson probably needs to be reset. Kenneth and Miles could put forward more information to the committee on how the upgrade could be used (for instance, by schools). They should also list what the improvement would be over the Ericsson, including the pros and cons versus re-setting the existing Ericsson. Sergey feels the D-700 and its power supply passed their cooling tests.

A motion was made and seconded, and the delegates voted to give approval to move forward with the SuitSat-2 proposal.

Frank spoke on our involvement in the exploration initiative. There are currently very minor requirements for payloads. But we should consider being able to possibly propose an external payload on Orion (the service module). We should consider, also, the crew module (planning is about 2 years out) and a wireless radio going to the outside of the vehicle. Lunar activity is about three years away, and delivering items that will stay on the moon are about 6 years out. Orion flies around 2012-2014, and in 2020 would be flying to the moon. The international ARISS delegates asked how the exploration initiative might be affected by the November USA national elections. NASA has planned so much for this project, and probably can't go back to a shuttle-only program. Many US Congressional people are interested in exploration. Levels of funding, priorities and dates may change, however. The Project Selection & Use committee should be ready on a moment's notice if an opportunity for ARISS were to arise. The Russians have ideas, also. They plan for civilian Soyuz rides to the moon, and circumventing the moon in 2010. Sergey had already suggested SSTV for this. Sergey and Frank spoke to Space Adventures about this, and the committee needs to develop concepts for this. Frank stated that all of our exploration plans must be lightweight, low-power, small systems that can be used whether for missions involving robotic projects or human flight projects. We need to think about RF. We need to determine what we can build that is practical. Our ARISS exploration committee has done little due to other constraints. The Project Selection and Use committee and the Hardware Committee should work together, now. Robin feels we need a group working at the same time that would consider our long-term ARISS vision. We must show the agencies we have done our math, and that what we propose is feasible and capable of what we say can be done. In the next six weeks we will have a strategy meeting. We will find more volunteers to assist, such as Mark, Carol, Kenneth and other people that the delegates suggest.

The World Encyclopedia of Travel is a Russian group that is a worldwide professional adventure team of 7 to 10 people. See: www. [TBD - presentation not yet received] The team is developing an encyclopedia, and Pavel Vinogradov is a team member. The team's goal is to learn more about earth and its connection to space. Their first trip is to Africa in the February-March time frame. The team is looking for sponsors; they are not asking for money. Because there are a few hams

on this team, during their trips they want to communicate with hams worldwide and the ISS crews. They would probably make contacts from remote locations, and may want hams to track them when they are involved in dangerous adventures. They may want contacts with hams around the world are involved with schools. They are explorers who will be promoting education and the similarities and differences of cultures. They are looking for endorsements and psychological support. Should ARISS decide to participate with the team, our name and logo would be included in all of their material and movies, which would provide us with good publicity. A motion was moved and seconded, and approval was given via a vote stating that the delegates will provide non-financial support.

A presentation called, "Invitation to Russia in 2007," prepared by Sergey and Irina Pronina was given about next year's annual ARISS international meeting. See: http://www.amsat.org/amsat/ariss/Meetings/2006_San%20Francisco/Presentations/18_ARISS-07.pdf The cosmonauts have said they would meet with us and help accommodate us, and October is a month of many Russian space commemorative days. We may meet at a space memorial museum conference hall, and Sergey stated that the Cosmos Hotel would be suitable for us. Then we could visit Energia to see MCC-Moscow (Mission Control), which is halfway between Moscow and Star City. On Friday evening we could take a two-hour train ride to Kaluga where Konstantin Tsiolkovsky was born and lived, and tour the memorial sites. There is also a space museum we could tour. Sergey proposes staying in Moscow, then go to Star City to see where the ISS crews train, visit several parts of the facility and meet with some cosmonauts. Dates would be October 4-9, arriving on the 3rd for the Sputnik activities on the 4th. We would be in Moscow starting on Sunday for 2 days, then in Kaluga for 2 days, and finally, at Star City for 2 days of meetings. Spouses could go everywhere the delegates can go. Energia is off bounds except for NASA people who have security clearances, but our group would only be visiting the museum there, and we would find a meeting room that is off site. Sergey would look into any problem with VISAs, and set up the dates we need to meet in order to get invitations from the various facilities for us. The ARISS Team had expressed interest in these Russian venues, and thanks Sergey and Irina for their work in developing the proposal. The team needs to think about a venue for 2008.

Gaston reported that Eurocomm has scheduled for March in Holland, a ham radio exhibition, including topics about space. He will share notes about the events from a meeting that was held to set up this exhibit.

Delegates and attendees gave closing comments of appreciation to everyone for their hard work, dedication, effectiveness and love for the project. A thank you goes to Carol for her work at pulling together so many things for the San Francisco meeting. It is great to view the many successes of ARISS, and to watch the seeds get planted by all of us for new things. It is wonderful to see kids explode (and the parents cry!) at the end of the ARISS QSOs. Next year should be just as exciting!

