



ARISS Training Status

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Training Status Agenda

- International agreements
- Training philosophy
- US efforts (Mark Steiner, K3MS)
- Russian efforts: RSC-Energia and GCTC



Training – International Agreements

- Close to signing tri-lateral agreement between US, RSC-E, and GCTC
 - Covers responsibilities of each side, expectations of crew readiness, coordination of training assets
- Appendices cover:
 - Requirements for ham radio basic crew training (syllabus)
 - ISS crew ham radio training program and procedure (more details)
- Conducting final negotiations as to expectations between NASA crew office, joint training control board, and RSC-Energia



Training – International Coordination

- Have moved to monthly discussion as part of technical telecon
 - participants: ARISS-US team, NASA, RSC-E, and GCTC
- Need to better coordinate training assets among all training sites
 - Flight-like hardware
 - Flight software
 - Onboard procedures
- Need to better communicate and coordinate individual crewmembers' readiness and interest levels



ARISS – Crew Training Philosophy

- Each country is responsible to get its crew members excited about ham radio
 - Show them what is so exciting about the hobby
 - Involve them in QSOs, school contacts, and other activities
- Each country is responsible for basic ham radio training and licensing
 - Provide access to equipment for personal use to gain experience
- Minimal time available for ham radio training as combined crew at US and Russian facilities
- Limited primarily to joint simulations in high-fidelity simulators
 - No time to gain expertise on ham radio operations
- Each country providing hardware is responsible for providing sufficient training units



U.S. Training

- Basic ham radio training – local JSC support
- Licensing – local JSC support
- Official JSC training – working to get dedicated, part-time trainer
- Syllabus – under final development, based on Russian version



US Syllabus - proposed

1. Basic principles and special features of Ham radio communications

- Legal basis for Ham radio communications
- Procedures for ham radio broadcasting
- Ham radio call signs
- Standard voice communications and their content
- Ham radio frequency bands
- Logging of communication sessions
- Sessions acknowledgement
- Ham radio jargon, ham radio codes, and phonetic alphabet
- Main types of ham radio communications

2. Packet communications

- Basic principles of Packet communications
- AX25 protocol. Structure of packet communication frame
- Main packet communication hardware items
- Ground network of ham radio packet communications. Hierarchical addressing in the packet network.



US Syllabus – proposed (cont.)

3. Transmission of images in ham radio communications

Fundamentals of the digital conversion of images

Principles of transmission and reception of images in SSTV modes

How to find, save, and send images

Proper settings for best video transmission/reception

4. Standard ham radio hardware set on orbit

System overview – how it all works and fits together

Hardware functions – what each component does and why it is there
(including cables)

Detailed operation of hardware set (enough to be able to put on-orbit
documentation in context)

5. School contacts

Educational purpose and goals

Timeline of school contact

Exposure to school contact (tape, or live)