



ISS Ham

Russian and US Operations Processes

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Operations Uses - Highlights

Educational Outreach

- Ideal school contact rate--average 1-2 per week; these are clustered, or spread out evenly over time, avoiding periods of EVA, docked operations, resupply.

Personal Contacts

- The suggested personal contact rate is no more than 1 per week per crew member. Since IP phone on Exp. 2, these are rarely scheduled.
- Frequencies used for personal contacts: The ISS Ham Team only publicizes the A1, B1 & B6 channels.

Outreach to the General Public

- Exp. 5 has made daily general contacts with the amateur friends using voice and packet contacts.

Experimentation

- Develop new communications techniques which can be used to enhance and expand new educational projects.



ISS Ham Operations Process – International Partners



1. ISS Ham is in Russian Segment (RS) of ISS, so RSC-Energia is responsible for:
 - Legal operation of radio
 - Activities involving certification, installation, and maintenance of flight hardware
 - On-board technical procedures and documentation
2. Hardware delivery is on Russian and US vehicles.
3. International partners (Russian, US, and others) coordinate operations including school contacts.
4. School contacts come out of crew personal time
 - A crewperson volunteers to do school contacts.
 - Schools may be scheduled during the work day
 - Scheduling depends on workload and level of interest of particular crewmembers.



ARISS/ISS Ham Support Personnel



Russian Specialist

ARISS Program Manager

ARISS School Committee

European Coordinator

Crew Amateur Radio Coord.

Crew ISS Amateur Radio Coord.

Crew Psych. Support

ISS Ham School Coordinator

ISS Ham Hardware Development

ISS Ham Training Coordinator

JSC Ham Shack & Lic. Coord.

ISS Ham Technical Specialist

Educational Representative

Integration Manager

Energia/Sergei Samburov

Frank Bauer

Rosalie White

Gaston Bertels

JSC/Ellen Baker

JSC/Linda Godwin

Wyle/Steve vander Ark

Tim Bosma

Lou McFadin

Mark Steiner

Nick Lance

Gil Carman

Debbie Brown

Carolynn Conley



Operations Hardware - Summary



INTERIOR

1. Phase 1 hardware in FGB

- Exp. 1-6 use of IV hardware
- Phase 1 2-meter transceiver and Packet Module in FGB
- Exp. 5 set up a computer allowing Packet transmissions

2. Phase 1 hardware in SM – plan 2003 installation

- Transceiver and supporting h/w stowed in Node
- Exp. 6 will install a computer in the SM for Packet

3. Phase 2 hardware in SM – plan 2003 delivery and installation

- 2 Transceivers and supporting h/w to be installed on table near panel 421
- Packet ops will move from FGB to SM

EXTERIOR

4. EV Hardware

- Exp. 4 - 2 antennas on Zenith were installed in 2 EVAs
- Exp. 5 - 2 antennas on Nadir were installed in 1 EVA



ISS Ham Operations Process – Russian Side



MCC-M

- **Taxi crew coordination**
 - Negotiate a contract with crew (foreign) that includes ham activities
 - Based on the contract, approve flight program
 - Coordinate with taxi flight manager (foreign) which schools will have a contact with the taxi crew; select date/time
 - Train taxi crew; identify User level for taxi crewpersons
 - During taxi flight, monitor status, upload radiograms with questions and frequencies
 - In MCC-M schedule the flight program; if the schedule is delayed, reschedule the plan realtime to update the timeline.



ISS Ham Operations Process – Russian Side



MCC-M

- **School contact coordination**
 - Russian schools submit a request
 - Sergei submits it to TsUP approx. (a minimum) 2 weeks in advance
 - Confirm with schools that the time is okay
 - School questions are sent up via Radiogram
 - Schedule Russian schools so there are no conflicts with other radio uses
- **School contact scheduling limits on Russian side**
 - ISS crew - No changes 4 days prior to launch allowed to the timeline
 - Taxi crew - No changes 14 days prior to launch
- **Hardware procedures for installation, tests, and problems**
 - These must go through Russia because the hardware is in the Russian segment
 - Procedures go into the timeline and up via Radiogram and ISS communications (OCA)



ISS Ham Operations Process – US Side



MCC-H

- **School contacts coordination**
 - Coordinated through Flight Surgeon and BME (Biomedical Engineer) at Mission Control Center - Houston
 - Inputs are made for long-term planning and near-term on-orbit schedule.
 - Final crew products are an electronic timeline (OSTPV), Onboard Crew Activities (OCA) messages, and Radiograms
- **Hardware installation, tests, and problems**
 - Flight procedures are evaluated through official planning input process (the “*CHIT*” process for hardware failures) and flight note system
 - These are coordinated with IPRussia
- **Taxi crew coordination**
 - Provide training on the operations process
 - Provide redundant uplink of school questions via OCA
 - Coordinate with Sergei to verify schools are scheduled