

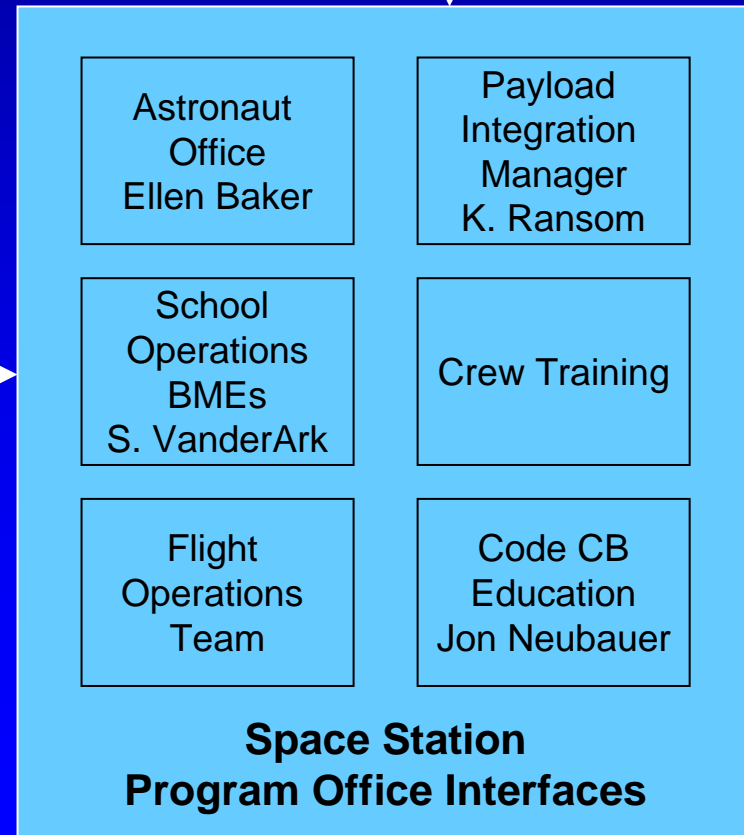
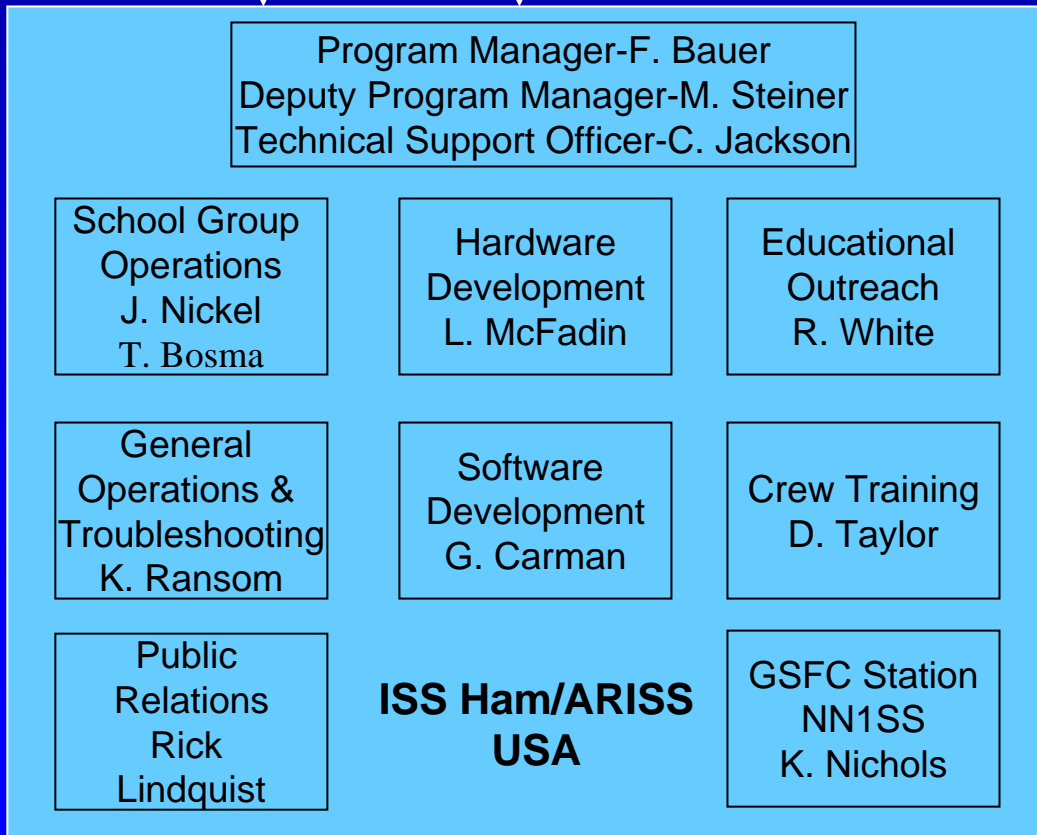
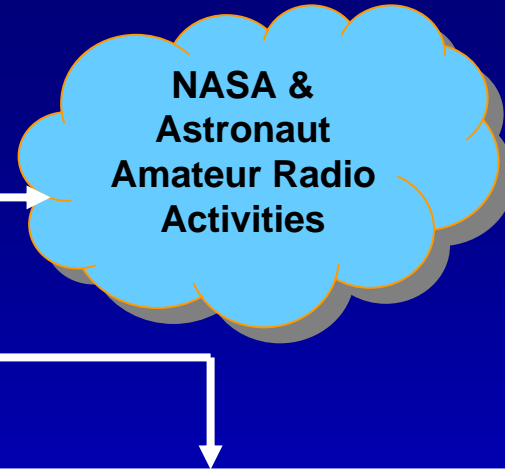
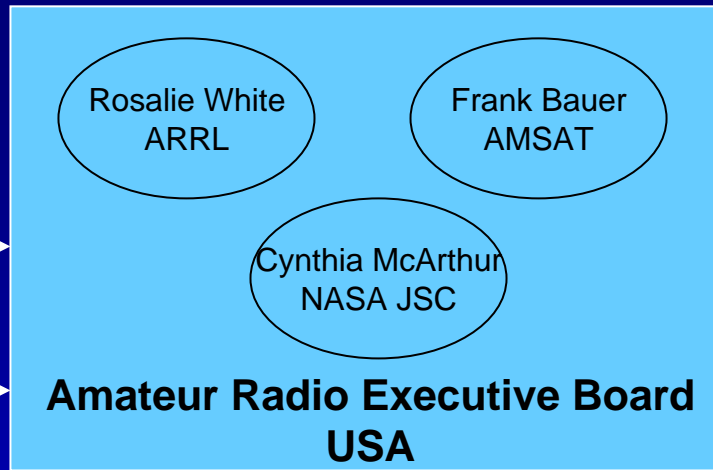
ARISS USA Report



**ARISS International Delegates
Meeting**
9 October 2006

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Team Interactions



US Team Support to Teleconferences

- US Team Supports Weekly Team teleconferences and periodic committee meetings and teleconferences
- Teleconferences include:
 - Ops team (Wed. night)
 - US team (Fri. afternoon)
 - ISS Ham Technical Team teleconference with Energia – (first and second Tuesday of the month)
 - ARISS international partners – (third Tuesday of the month)
 - ARISS International school group/education – (virtual meetings)
 - ARISS Project Selection and Use---as required
 - ARRL/AMSAT Tag-up--- as needed
 - Program Manager, US Delegates, Deputy Program Manager, Technical Support Officer, JSC Liaison Tag Up—Monday & Wednesday mornings

Discussions with NASA on Expansion of ARISS Outreach

- Types of outreach:
 - Internal NASA
 - International Ham Radio Community, ARRL, AMSAT-NA
 - General Public
- Expansion ideas started or completed include:
 - Weekly status reports to NASA and ham radio community—done regularly
 - Monthly status reports—done regularly
 - Annual report—done regularly
 - Planning for publicity to US Congressional representatives—in work
 - Additional school lesson plans—in work

Discussions with NASA on Expansion of ARISS Outreach (Continued)

- Expansion ideas being discussed/in-work include:
 - Set up teleconferences between US ARISS leaders and Johnson Space Center (JSC) Education Office
 - Update the NEEIS form
 - More involvement for ARISS with NASA Legislative Affairs Office
 - Create a Power Point presentation with JSC on ARISS education
 - Archive ARISS QSOs on the Web
 - More contact with teachers via a listserv

Note: Some of the above will require additional support from NASA

Expansion Will Impact the ARISS Team?

- Listserv/school coordination: additional support
- Web page development
 - Requirement for schools to submit high quality photography, video & audio from each contact
 - Requirement for schools to submit facts and stories about the QSOs, including how the schools was changed by the QSO
 - Timely acquisition & archive of release forms for students & teachers so that material can be used on web sites and in articles
 - Team members to write articles and compile information for web site and magazine articles

Note: Some of the above will require additional support from NASA

A Decade of Team Achievements

- The mission: consolidate many worldwide ham radio voices into one voice—a team—to coordinate development & operations of ham radio on ISS
 - ARISS---what a team we have!!
- It has been a decade since Frank Bauer and Rosalie White formed the beginnings of a US team and solicited for an international team to plan Amateur Radio on the International Space Station.

ARISS Beginnings

Houston Meeting, November 1996



Ten Years Later—Our Accomplishments

- 1st human spaceflight freq plan for 2 m & 70 cm
- Installed Ericsson 2 m radio system for voice & packet in the FGB less than two weeks after first crew arrival
 - Making ARISS the first payload on ISS
- Developed and mounted 4 multi-functional antenna systems by 3 EVAs on the periphery of the Russian service module; supports 2 m, 70 cm, L band, S Band, HF and GPS reception
- Installed UHF/VHF Kenwood D-700E in Service Module, near the dinner table and window
- Successful completion of over 255 international schools—kudos to the operations team and volunteer mentors on a job well done!
- 14 consecutive ISS expedition crews used our radio system to conduct thousands of QSOs with hams on the ground
- Over 15,000 students touched each year
- Millions, worldwide have heard an ARISS connection
- Witnessing students, worldwide, become scientists and engineers as a direct result of the ARISS connection
- The first Spacesuit satellite—SuitSat-1/Radioskaf deployed from ISS.



Expedition 12 Highlights

The Best Increment Ever for Ham Radio

- Inspired students at 37 schools
- Over 1800 general QSOs made
- 130 DXCC entities contacted (approximately 94 U.N. recognized countries). ARRL has confirmed 52.
- Earned ISS Honorary Awards
 - Worked All States
 - Worked All Continents on UHF
 - Worked All Continents on VHF
 - DXCC
- SuitSat-1
 - Assembled and deployed SuitSat-1.



Bill McArthur, KC5ACR
Most active ham aboard ISS

SuitSat-1/RadioSkaf--Amateur Radio Extra Vehicular Activity (EVA) In a Space Suit

Deployment: Feb 3, 2006

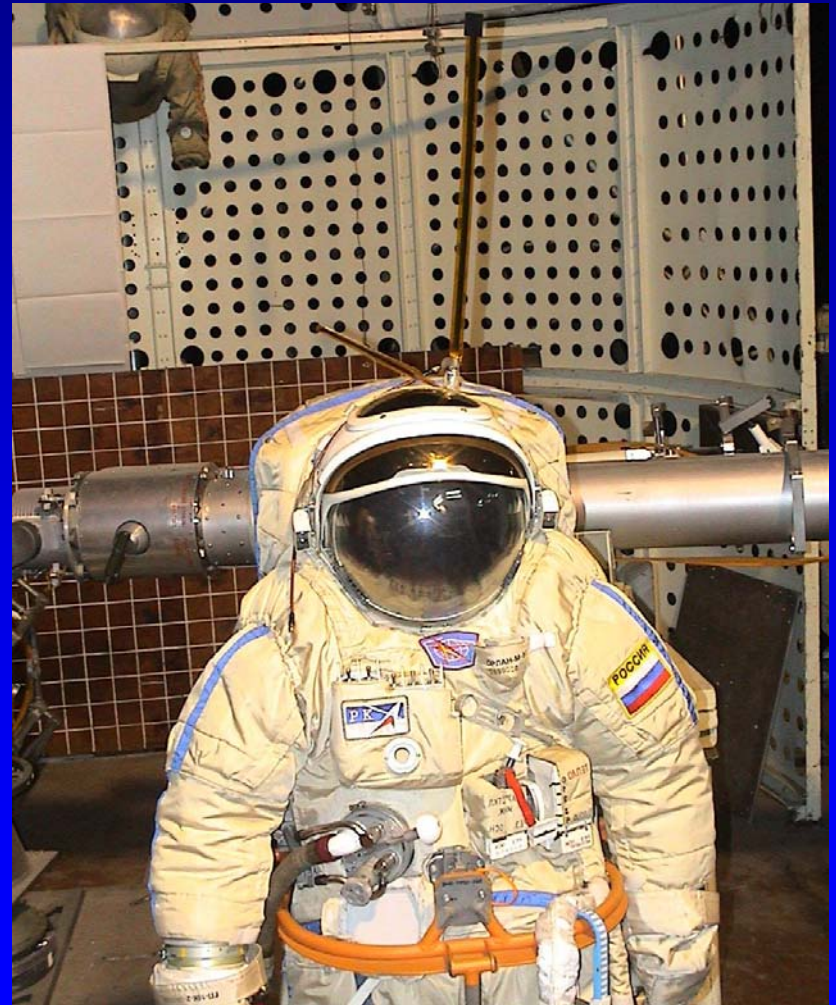
Re-entry: Sept 7, 2006

Outreach

- Captured the imagination of people and students worldwide
- Unprecedented outreach and visibility for a ham radio event
- Over 9.5 million hits to www.SuitSat.org website in February!

Student Educational Outreach

- Student's creative artwork, signatures and voices have been carried in space and were on-board the spacesuit---the students were space travelers in the Suit as it circled the Earth
- Collaboration with the NASA Explorer Schools
- Exciting post-flight lesson plans will be developed



Press Visibility

Small Sampling

Major Web Sites

- CNN
- National Geographic News
- Aljazeera
- Discovery Web Site
- MSNBC
- Spaceflight Now
- Yahoo

Television

- Fox 5 News (DC)
- ABC News (National)
- CBS News

Radio

- NPR—All Things Considered
- CBC
- Discovery Channel Canada
- WTOP (DC)

Newspapers/Periodicals

- New York Times
- Washington Post
- Florida Today
- Houston Chronicle
- Washington Times
- Boy's Life
- Reader's Digest
- Popular Science
- Aviation Week & Space Technology
- Design Electronics
- QST
- CQ-Japan



Reader's Digest



Popular Science



Telling the Amateur Radio & ARISS Story

The ARISS US Team always helps schools garner publicity, and a great amount is reaped at each QSO.

Beyond the schools efforts, in the first half of 2006 alone, some PR “wins” in the US included:

- NASA staged a presentation with help from Kenneth Ransom, of the ARRL WAS award to Bill McArthur, KC5ACR, at a Space Center Houston event.
- 10,000 families visited the Smithsonian’s Space Day event, where ARISS was featured at an AMSAT booth.
- The team gave 5 ARISS talks at Dayton’s Hamvention.
- The Team wrote material for a NASA booklet, *Inspiring the Next Generation*, handed out to US schools; NASA included 3 pages on ARISS and 2 pages on SuitSat-1.

Telling the Amateur Radio & ARISS Story continued

- An Engineering Week QSO in Washington DC had 7,000 people intently listening.
- Our Johnson Space Center team presented a talk to 100 US teachers at a Space Center Houston educator's conference.
- Members of the Titusville ARC hosted a weeklong special event station at Cape Canaveral to celebrate the successful US Space Shuttle Program and talk about ARISS in school

ARISS Accolades

- Frank Bauer was selected to compete for a national-level space achievement Rotary Award and was honored for this nomination at a black tie dinner in Houston
- Kenneth Ransom received the most coveted NASA award, the Silver Snoopy, by Astronaut Bill McArthur

For Our Youth

The ARISS Team has always stressed that “ARRISS = Education.”

- An example of this is: a space QSO educational experience: A student who was part of a *SAREX QSO* has since graduated from the US Air Force Academy. This year she is flying fighter jets, and aspires to join the astronaut corps!

Science & Technology Lessons in Schools

ARISS schools integrate ham radio into the classroom in many excellent ways. An example from 2006 is Salt Brook Elementary School (NJ):

- Students designed a web page to post their space experiments, ham communications and ISS tracking.
- Their area high school ham students mentored younger students and were Control Ops during the ARISS QSO.

Examples of 2006 Classroom ARISS Action

- Bi-weekly, an Illinois ham teaches electricity to all 4th graders from a school waiting for an ARISS QSO; some teachers and kids will study for ham exams.
- An ARISS volunteer had the 5th grade classes at Romeo Elementary School (FL) doing hands-on satellite and HF fun for two days as part of preparing them for the school's upcoming ARISS QSO.
- Astronauts took part in ARRL Kid's Day & ARRL School Club Roundup.
- A parent emailed us after a school's QSO to thank us for spurring her son into taking technology courses.

Examples of 2006 Classroom Action continued

- ARRL set up and staffed an exhibit at a national-level teacher conference.
- Astronauts took part in ARRL Kid's Day & ARRL School Club Roundup.
- We networked some ARISS schoolteachers to ARRL's Technology Education Program, and they are using its technical lesson plans.
- Students "took part" in the SuitSat "spacewalk" with their orbiting pictures, artwork and signatures. SuitSat's on-air voice was of students beaming their greetings to the world.

Hardware/Operations Achievements

- US/Russia ISS Ham Technical Team teleconferences held on Tuesdays at 1100 UTC
- The Hardware, General Operations, and School Group Operations Teams, Led by Lou McFadin, W5DID, Kenneth Ransom, N5VHO, and John Nickel, WD5EEV, have accomplished substantial amount this the past year
- Small sampling of recent activities includes
 - Two Technical Interchange Meetings (TIM)--one at Johnson Space Center, one at Goddard Space Flight Center, to discuss SuitSat-2, ARISS Phase 2 hardware, and on-board operations
 - Phase 2 Hardware changes include move from FT-100 to FT-817
 - Planning for dedicated onboard computer
 - SSTV installation, testing and debug
 - Coordination of on-board troubleshooting and reconfiguration of D700 radio with Sergey Samburov
 - Preparation of school group contacts through mentors and coordination of scheduling & uplink information to NASA and Russian Mission Operations teams
 - Review of crew training recently done with radios

Johnson Space Center Team Aids the Crews

JSC Team members assist astronauts with their Amateur Radio interests:

- Kenneth Ransom and Nick Lance take the lead in teaching Amateur Radio material to the astronauts ready to study for their ham exams, and handling part of the training on the operation of the ISS radios.
- Of the 14 graduates in the latest astronaut class, 11 earned their ham licenses.

Planning for the Future

- Frank Bauer and Rosalie White networked with Johnson Space Center staff in August 2006
 - Discuss current ARISS status
 - Plans for future
 - Communicate and strategize thoughts and ideas for ARISS team to get a foothold into new Exploration (Moon, Mars) initiative
- Very positive discussions for the future

It is going to be an exciting trip for the ARISS Team; do ensure you're a key participant in our collective journey!