



Welcome!
Are you ready for a fun
ride?

Today's Topics

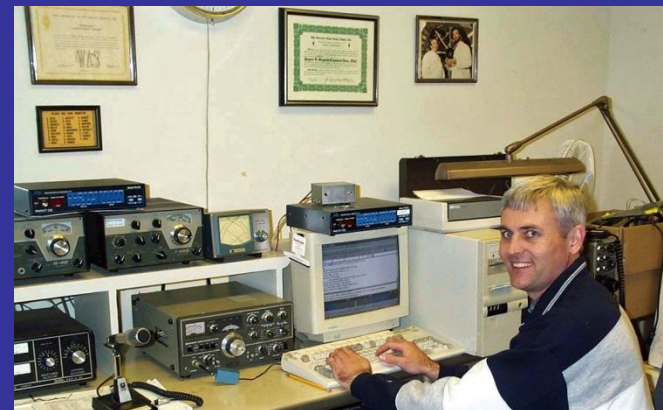
Presented by:

Brian Johnson AB6UI & Darrell Warren KA6OSC

- What is Ham Radio?
- The International Space Station “ISS”
- What is ARISS?
- Antenna Tracking Demonstration
- Video of ARISS school contact
- Happy students; schools from around the world
- Your Questions ?

Amateur Radio

- Amateur Radio is also known as “Ham Radio”
 - In 1873, James Clerk Maxwell presented his theory of the electromagnetic field. In 1901 Guglielmo Marconi communicated across the Atlantic with a radio device using high power and giant antennas. To curb interference, Congress approved the Radio Act of 1912, which required amateurs to be licensed.
 - Ham radio is a popular hobby that brings people, electronics and communication together. People use ham radio to talk across town, around the world, or even into space, all without the Internet or cell phones. It's fun, social, educational, and can be a lifeline in an emergency

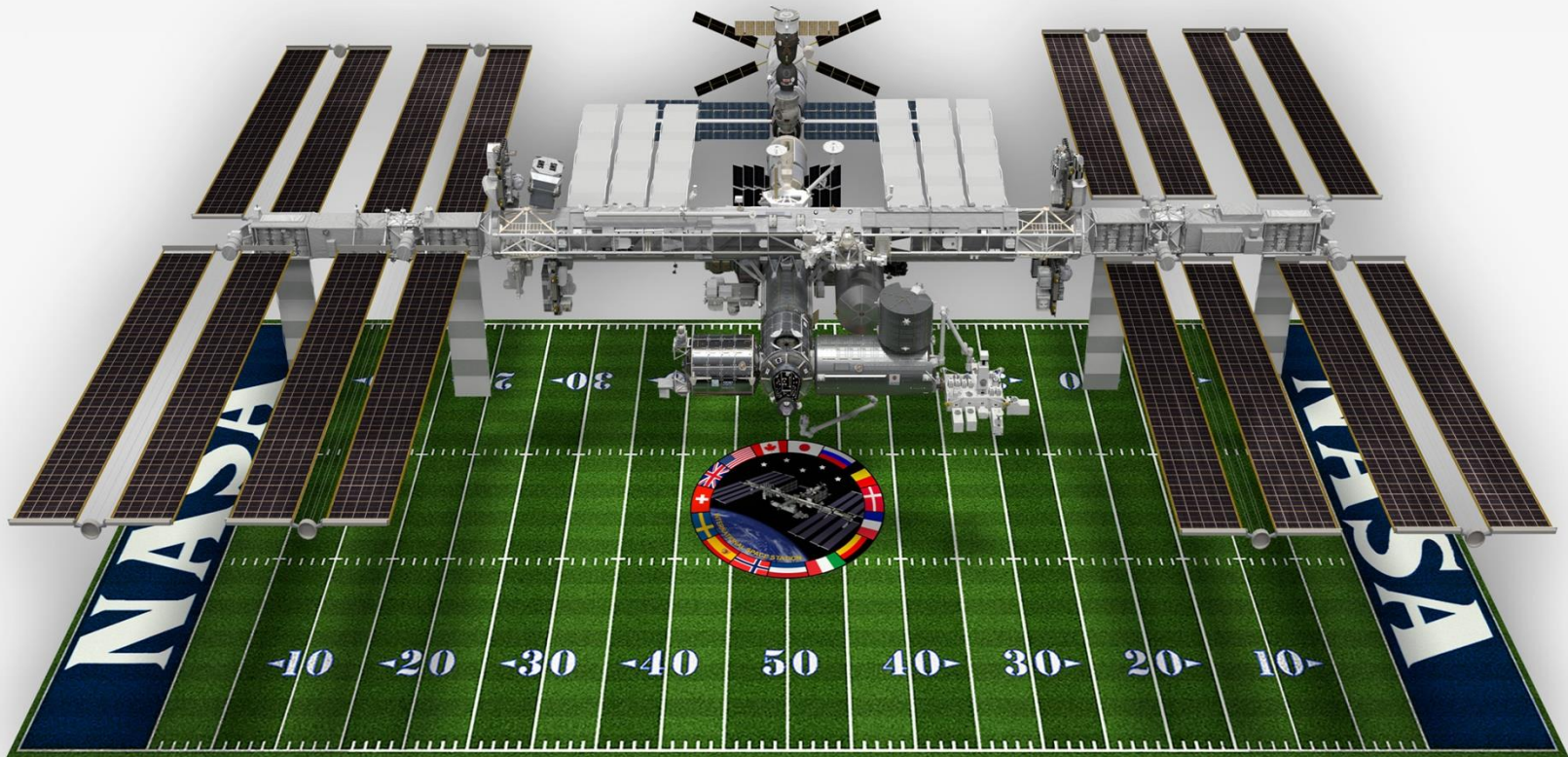


What is the International Space Station “ISS”?

- The International Space Station is a large spacecraft. It orbits around Earth. It is a home where astronauts live.
- The space station is also a science lab. Many countries worked together to build it. They also work together aboard it.
- NASA uses the station to learn about living and working in space and to perform scientific experiments. These lessons will help NASA explore space.
- The space station is made of many pieces. The pieces were put together in space by astronauts starting in 1998. The first crew arrived in 2000 and it was completed in 2011.
- The ISS orbits the Earth at an altitude of approximately 250 miles and it travels at 17,500 mph. This means it orbits Earth every 90 minutes.



INTERNATIONAL SPACE STATION




RESEARCH AND TECHNOLOGY CONTINUOUSLY OPERATED FROM ISS:

- Biology & Biotechnology
- Earth & Space Science
- Educational & Cultural Activities
- Human Research
- Physical Science
- Technology Development & Demonstration

Learn About Station Research:
www.nasa.gov/iss-science

 fb.com/iss

 [@ISS_Research](https://twitter.com/ISS_Research)

 instagram.com/iss

Explore STEM on Station - Lesson Plans, Opportunities, Activities,
and more for Educators and Students:

www.nasa.gov/STEM_on_station

Understand the Station Research Benefits for Humanity:

www.nasa.gov/stationbenefits

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ISS Video

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ARISS

Amateur Radio on the International Space Station

Development & Operations on the International Space Station (ISS)

Working with our international partners to develop & operate Amateur Radio on the International Space Station (ARISS)

ARISS Organization

- Nine international partners thus far—Belgium, Canada, France, Germany, Italy, Netherlands, Japan, Russia and United States
- MOU—Formed ARISS to represent the amateur radio community to the ISS Program
- Rules & Bylaws developed with delegates from Europe (4), America (4), Russia (2) and Japan (2)



ARISS Objectives



Spark Student Interest
In Science & Technology



Crew Family Contacts
(Crew Psychological Ops)



Promote Interest
In Amateur Radio

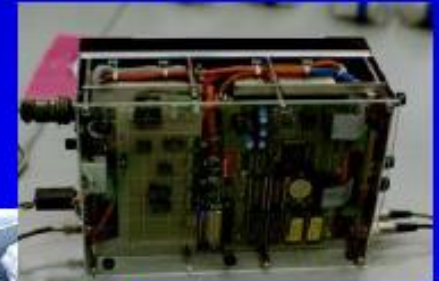


Human Spaceflight
Awareness



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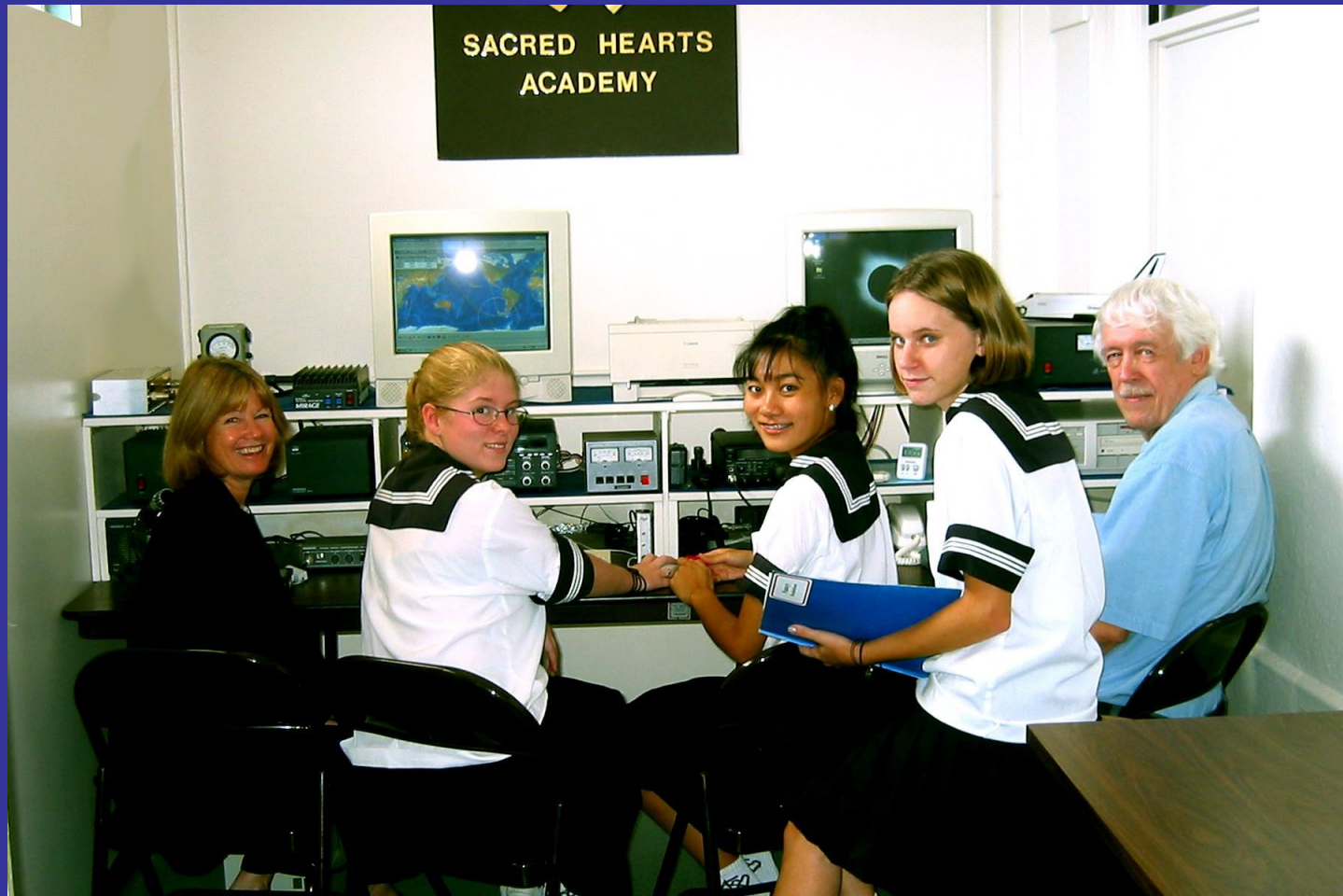
Experimentation



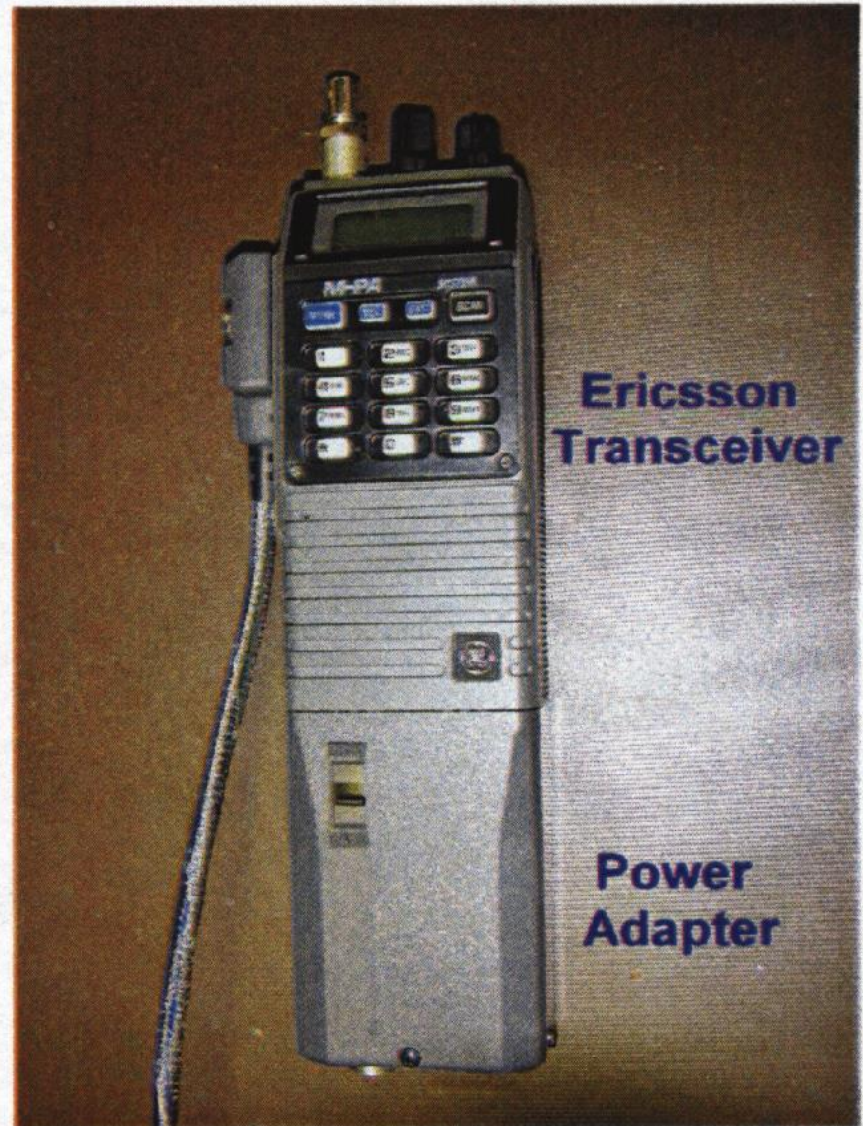
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Hawaii telebridge station

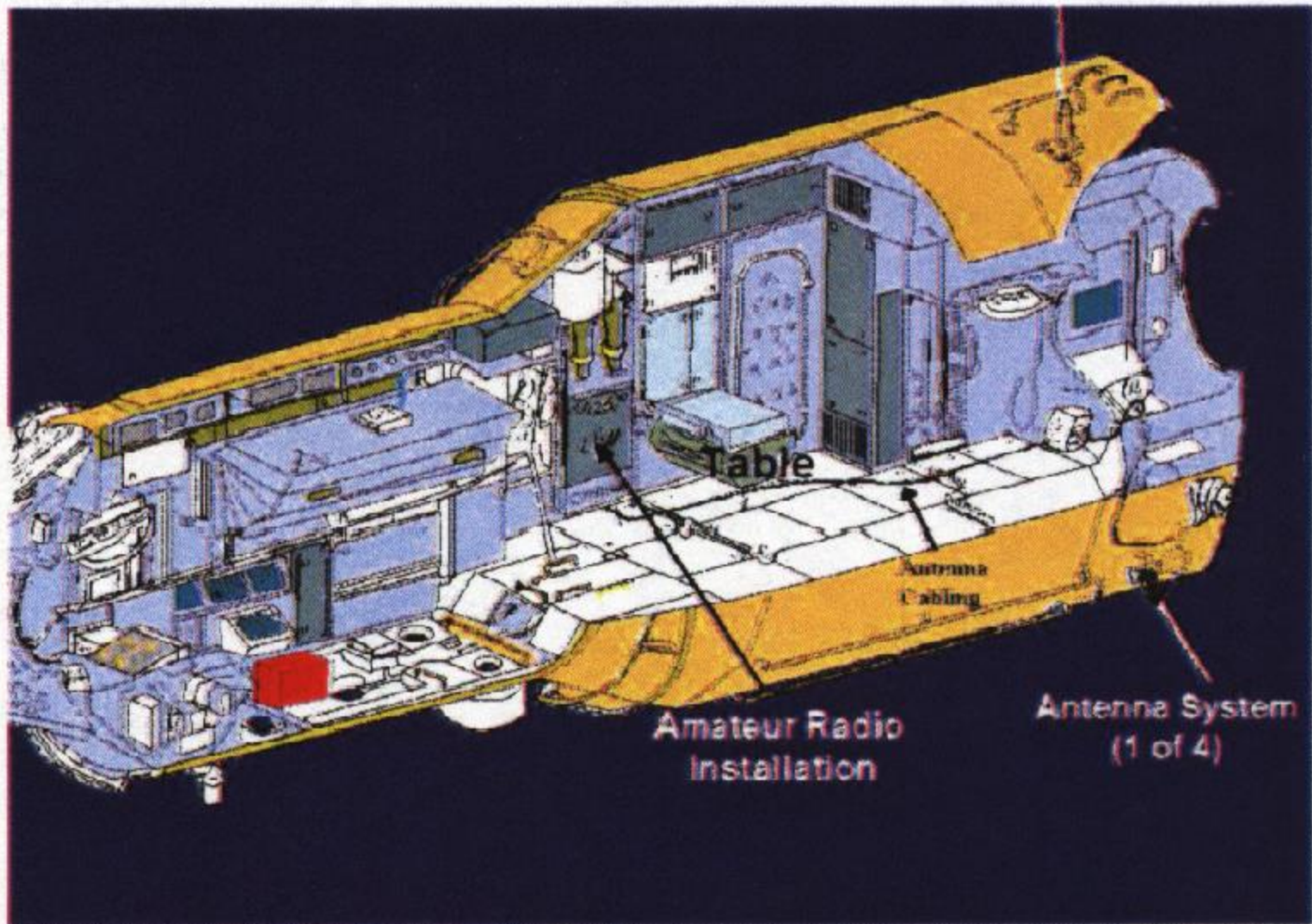
WH6PN AH6NM



ARISS radio



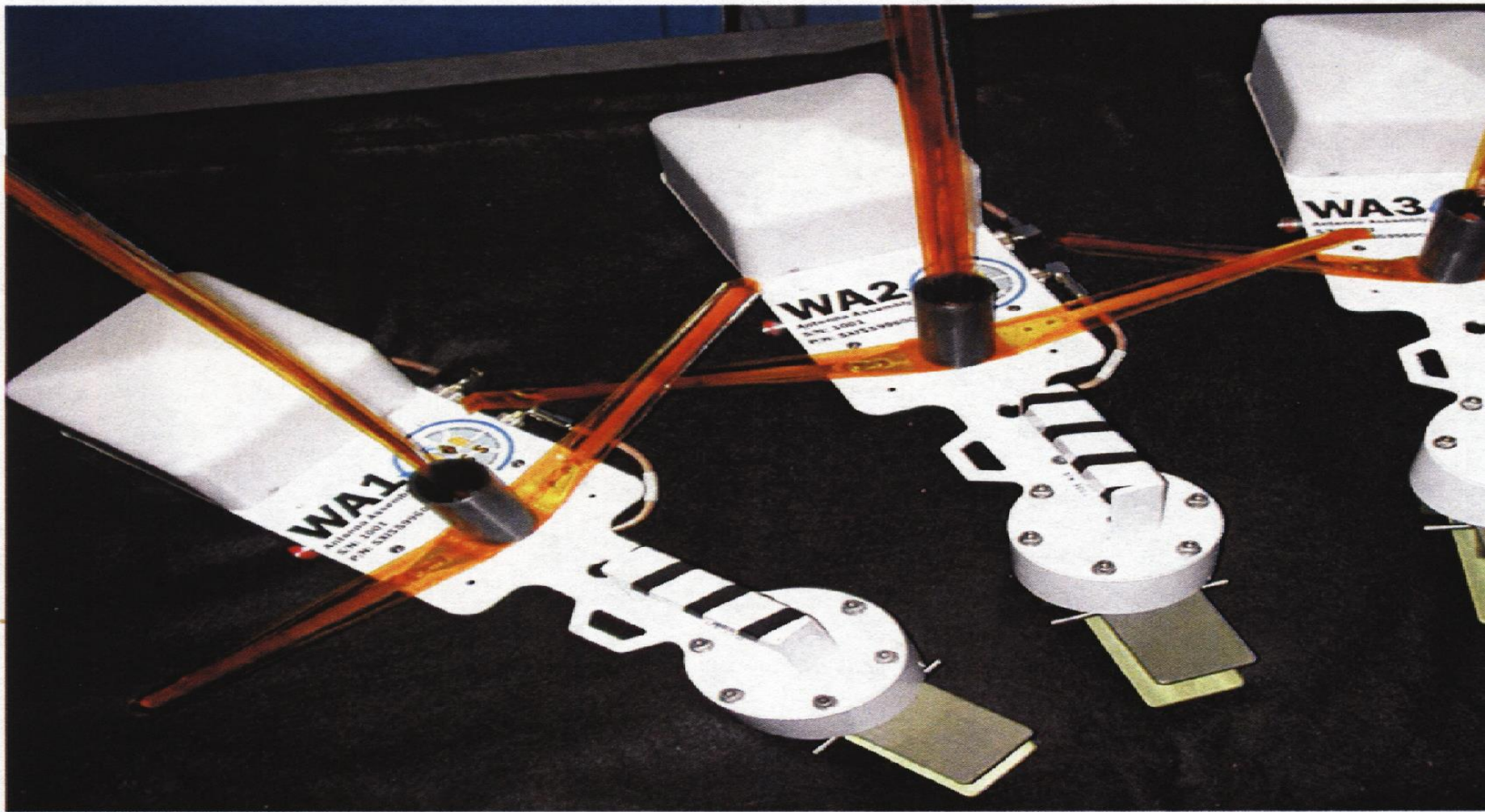
Transceiver & Power Adapter



ISS Ham Hardware Location in
Service Module

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ARISS antennas



Antenna Systems WA1-WA4

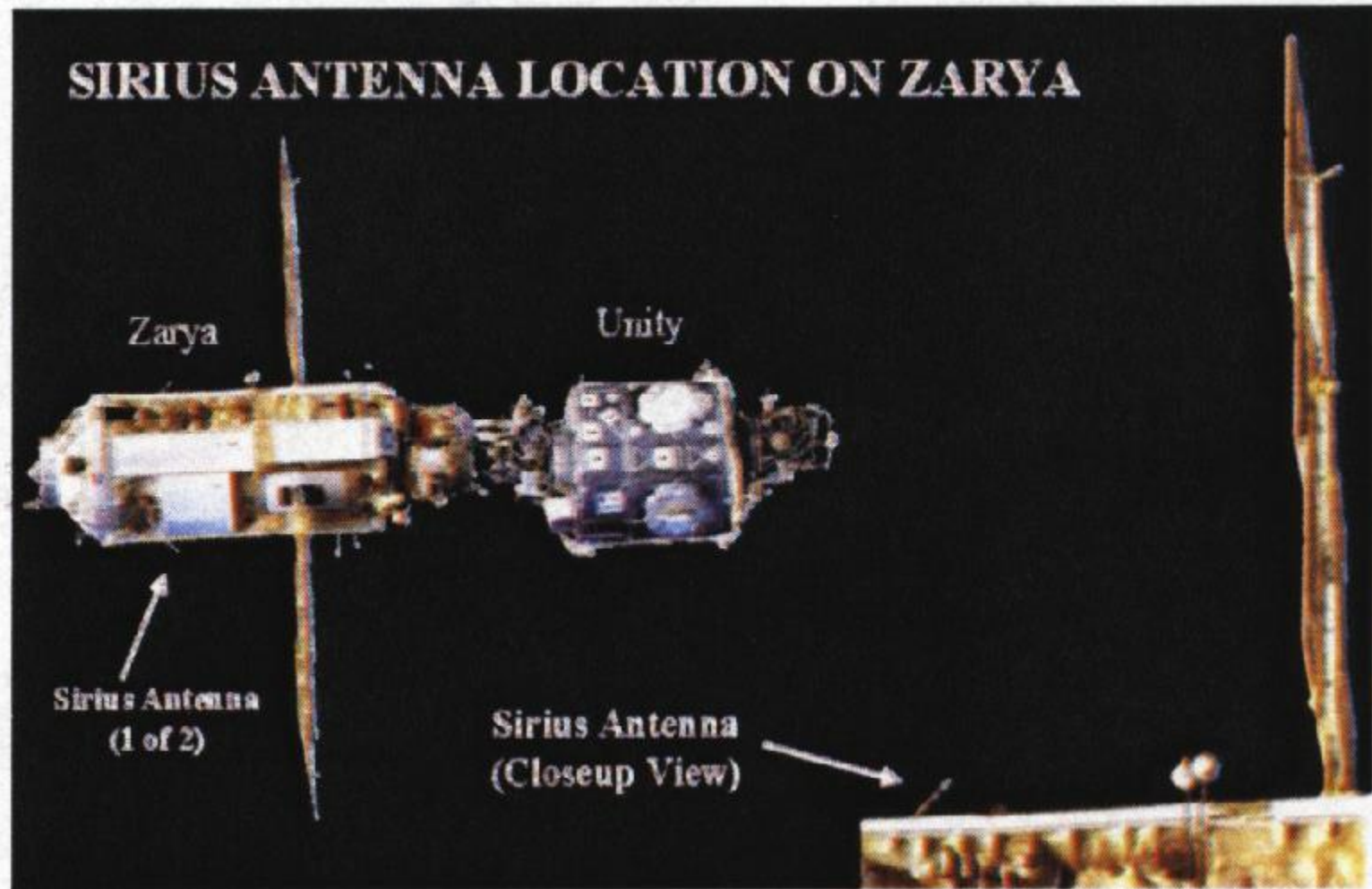
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EVA to mount the ARISS antenna

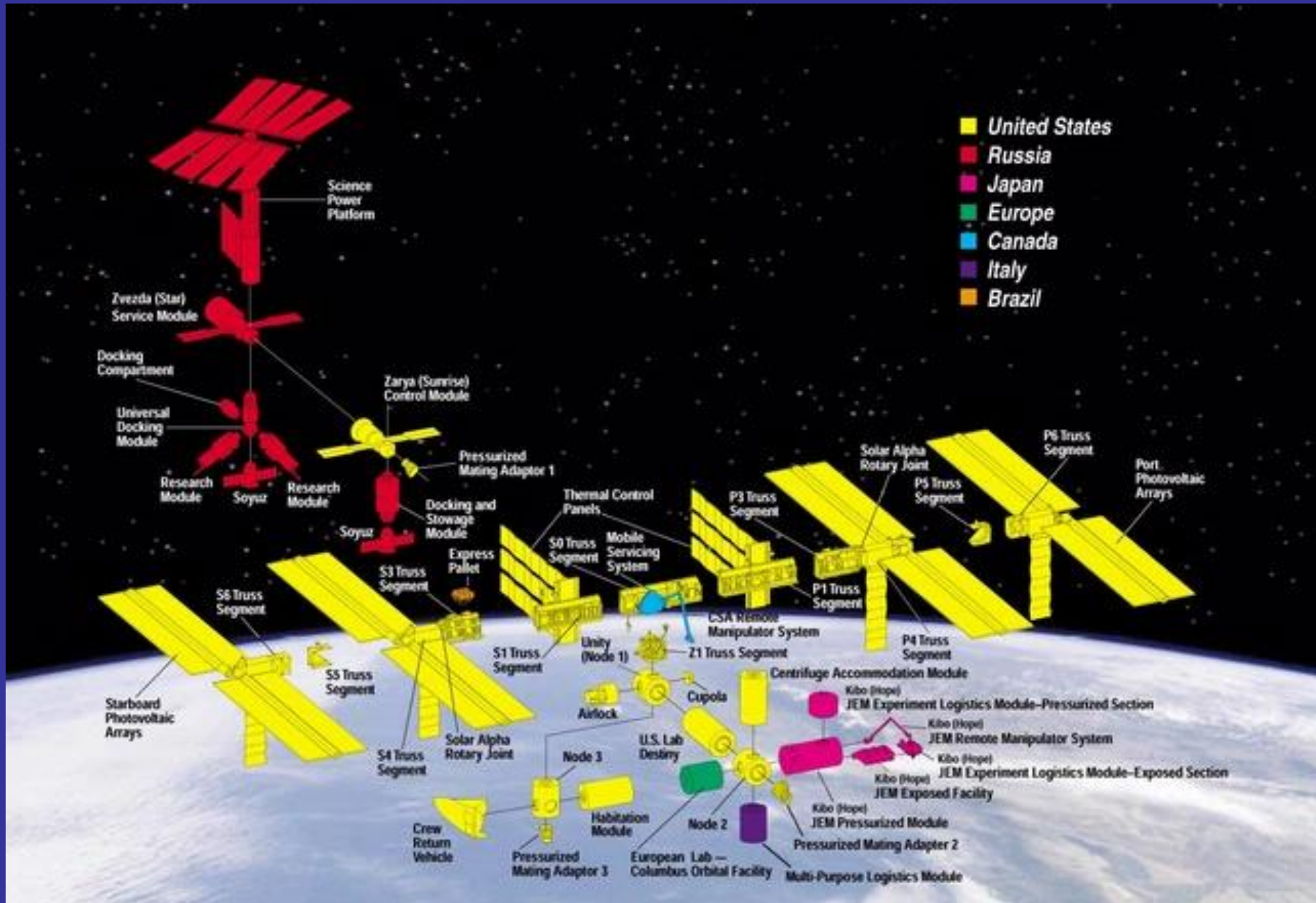


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SIRIUS ANTENNA LOCATION ON ZARYA



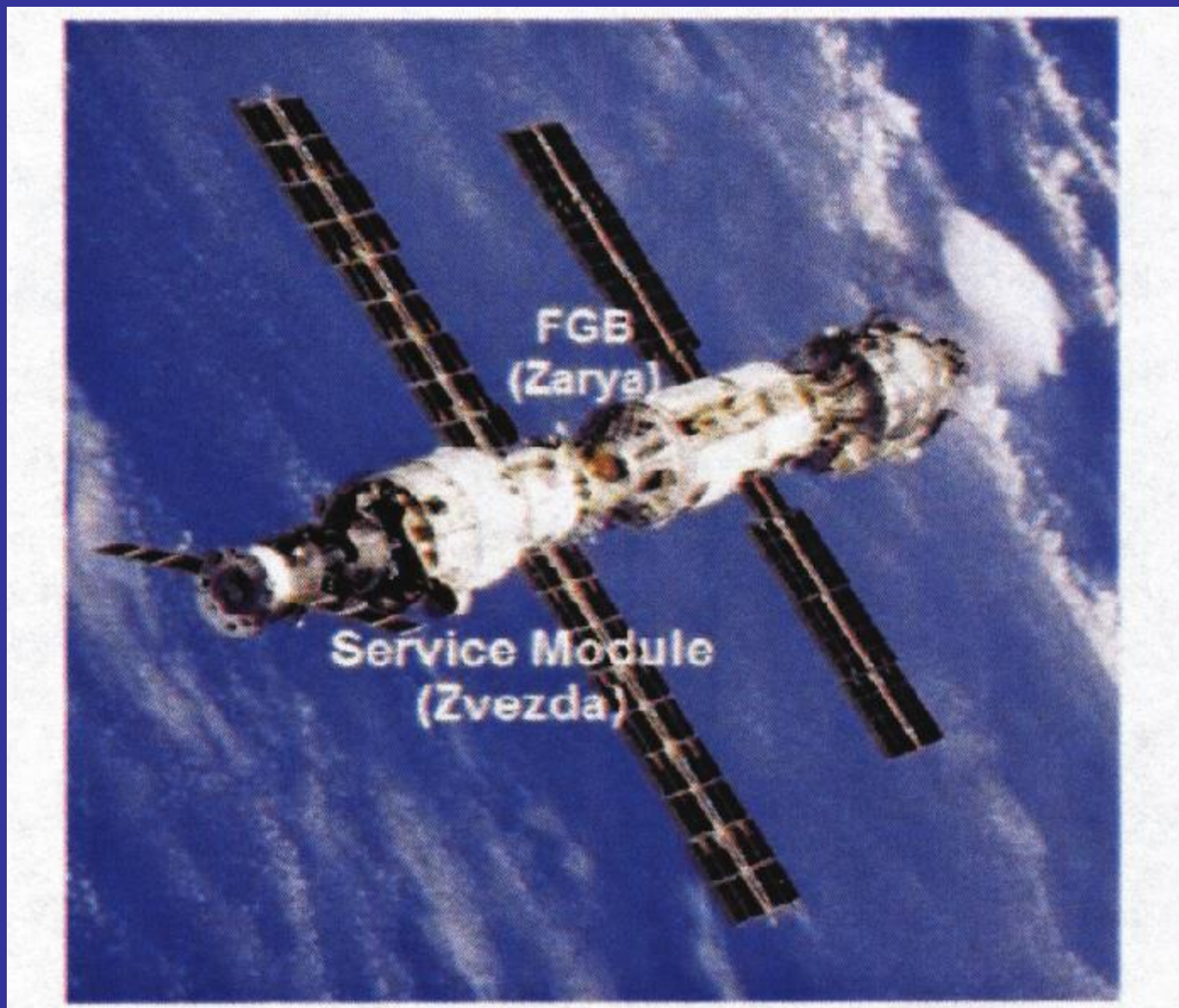
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Setup for ARISS



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Setup for ARISS LAAMS



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Antenna setup for ARISS Mendez Middle School



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Completed Antennas



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Ham Radio Station



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AZ/EL Rotor & Tracking Demo

Pre-Contact

ARISS Contact Prep Video

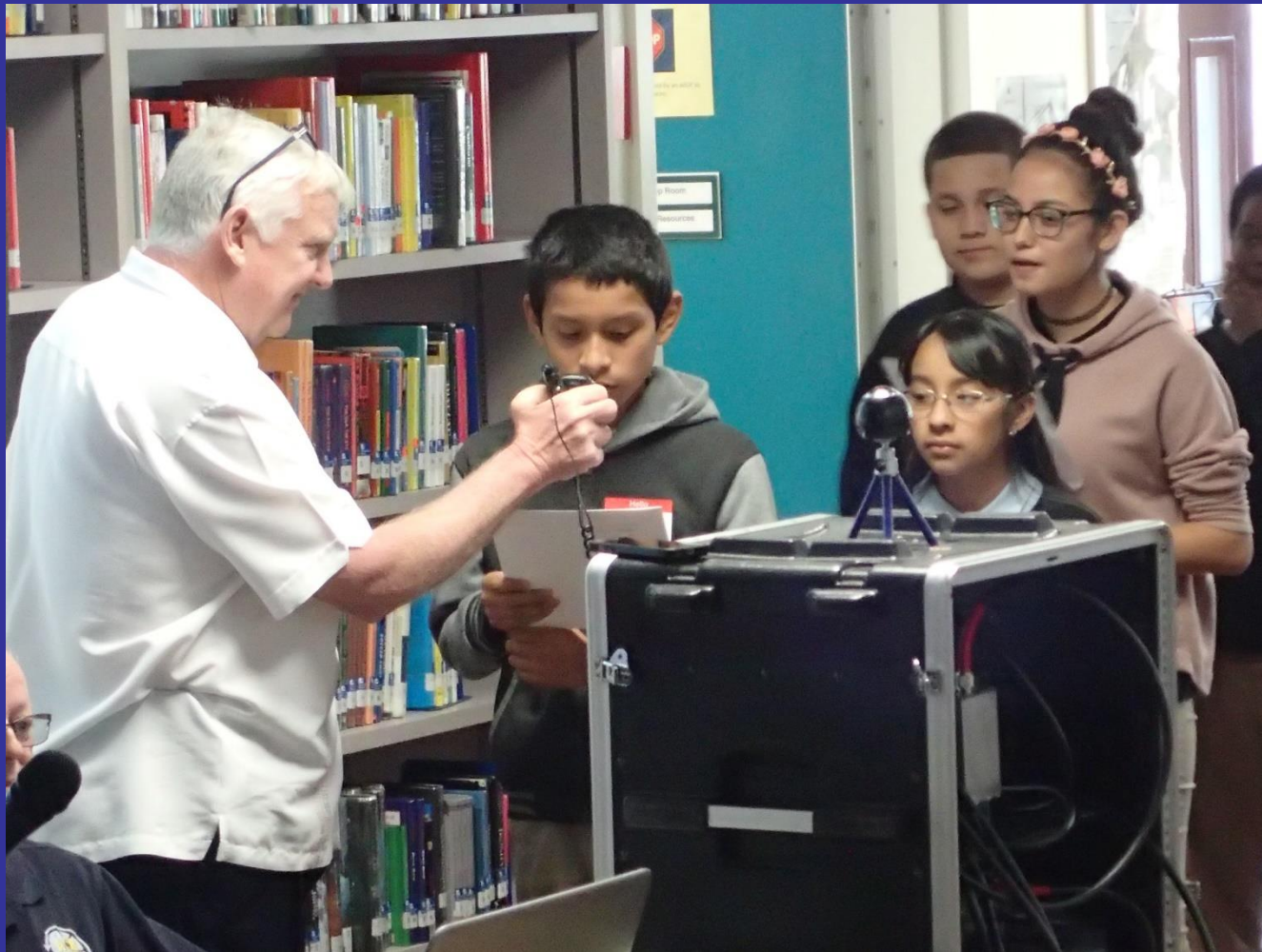
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Contact!

ARISS School Video

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LAAMS ARISS Contact



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Post Sucessful Contact

Happy students

Mendez Fundamental Intermediate Sch

Santa Ana Unified School District



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MELENZ FUNDAMENTAL
INTERME

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Kursk Technical University

ARISS#47

Kursk, Russia



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Your Questions ?

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Bonus Material for Educators

Application process

- Twice a year for about 2 months each time, ARISS will accept proposals.
- Spring window is for the first half of the next year. Fall window is for the second half of the next year.
- Latest information may be also found at <http://www.ariss.org/index.html> or www.arri.org

Application process (cont)

ARISS will select schools initially based on educational proposal.

Proposals will be evaluated based on the following criteria:

- Education
 - Logistics
 - Outreach
 - Reporting
-
- Once these schools are selected then final acceptance depends on the successful completion of an equipment list.

Application process

- U.S. education organizations interested in hosting an ARISS scheduled contact will find information about submitting a proposal below. (International schools should submit applications following instructions provided on the **ARISS Program website:**
<http://www.ariss.org/>

Application process

- Educational proposals should include plans for students to:
- study topics related to space technology, space exploration, or space research, and,
- learn about communication, wireless technology, and radio science

Application process

- The more advance preparation educators make with educational plans, the more learning and value the ARISS event will have for students. Imagine your students interviewing an astronaut in space, maybe even using an antenna your students have assembled!

Application process

- ARRL's Education & Technology Program and NASA offer valuable resources to help you and your students learn about wireless technology and satellite communications and space exploration. Go to ARRL's web page: **Preparation for an ARISS Contact** for links to those resources.

ARISS Contact Timeline

Pre-contact

Pre-contact

- About 6 months before the contact a mentor is assigned to the school.
- Mentor contacts the school to determine if they are still interested.
- Mentor gives the school best weeks predictions.

Pre-contact

- School informs mentor what weeks will work.
- About 1.5 months out, mentor presents a week with predicted times for each day and asks for priority order. Also asks for short story on the school and the student names with their questions.
- School picks top 5-7 days.

Pre-contact

- Top 5-7 days are presented to the ISS planners.
- Pray the ISS planners will pick one of the days.
Yes, the Flight Surgeons are god!
- About 10 days to 14 out, a confirmed time is hopefully presented. We have had the confirmed date given to us as late as 36 hours out. We have been aborted the morning of a contact.

Pre-contact

- Saturday before the contact day is suggested setup day. Test test test test. Did I say test everything?
- Early morning of contact day. Final preparations. TEST TEST TEST EVERYTHING WITH A FULL END TO END CHECK!
- Minutes before contact. Don't have a panic attack. I tell the audience that they are not allowed to panic unless I panic.

ARISS Contact Timeline

Contact

Contact time

- 10 minutes of the most stressful yet fun time in your life. Remember that this is an experiment and experiments do fail.
- Almost relief! Hang in there!
- Pray the equipment keeps working. Think of this as a Super Field Day.

ARISS Contact Timeline

Post-contact

Post-contact

- Let it all hang out! You did it!
- Have everyone sign the log.
- Send for QSL. The kids create their own QSLs.
- Final report with Mentor. We want digital pictures and audio files ASAP.
- Take the ARISS survey. Basically required and helps keep the funding going to the ARISS program at NASA.

ARISS Information (Including School Group Proposals)

The new ARISS webpage is at

<http://www.ariss.org>

