

ARISS telebridge protocol

1. General

A direct ARISS School Contact involves the setting up in the school of a satellite type amateur radio ground station. This is done by volunteering radio amateurs.

For several reasons a direct radio contact is not always possible:

- the school building or the location may be inappropriate for setting up a reliable satellite type amateur radio ground station (antennas, horizon limited...)
- there are no passes of the ISS over the location at the time the contact should occur
- etc...

In such a case ARISS offers the possibility for a "telebridge". The ARISS organisation has several dedicated satellite ground stations operated by volunteering radio amateurs. These stations are capable of linking the astronauts to virtually any school in the world that has a phone service and are located in :-

- USA Eastcoast
- USA Westcoast
- Honolulu
- South Australia
- South Africa
- Europe

ARISS will select the most appropriate ground station to handle the radio contact with the ISS and the uplink/downlink signals will be relayed to the school by teleconference at no cost to the school.

2. "Telebridge" equipment

In the school a "speaker-phone" is needed. The speaker-phone shall be equipped with a separate microphone and connected to the public address system of the room where the audience is assisting.

Special care shall be taken to avoid audio feedback (Larsen effect).

The speaker-phone shall be connected to a secure phone line. Care shall be taken that the phone line is free at least 30 minutes before the radio contact.

A secondary phone and separate phone number are also needed. The secondary phone may be a mobile (check that it is operational).

3. Preparation

The school shall prepare 20 questions, numbered from 1 to 20.

The questions shall be written like this:

1. My name is Christian. How do you feel in space? OVER.
2. My name is Alice. What is.... OVER.
3. My name...

Once approved, the numbering of the questions SHALL NOT BE MODIFIED. The questions shall be asked to the astronaut in the order of numbering.

On the other hand the names of the students may be changed up to the last minute.

The questions shall be addressed to the ARISS mentor in charge of the school contact at least 10 days before the event. A short description of the school and their space and science oriented educative project is also needed.

The questions will be radiogrammed by Mission Control to the astronaut. The radiogramme will also feature the script describing the school.

During the radio contact, the astronaut will read the questions from the radiogramme while he listens to the students. In case the radio link is disturbed he will still be able to answer a question.

The schoolchildren/students shall be trained to speak into the microphone.

They shall queue in a row, holding a sheet of paper with their numbered question.

Attention shall be given to good pronunciation:

- not to fast speaking
- clear pronunciation
- loud voice
- mouth near to the microphone
- not to let the voice drop at the end of the phrase
- not to forget the word OVER at the end of the question.

Experience has shown that three rehearsals are needed, for adults as well as for children.

4. Telebridge procedure

One hour before the contact the audience will be invited to a presentation on the ARISS School Contact.

A data projector (beamer) will project the world map showing the ISS progressing on its orbit in real time. Several free PC programs are available where the location of the ground station can also be shown. With this set up the presenter can explain how the telebridge contact will be performed.

30 minutes before the radio contact the teleconference is started and participants are called in by a telephone operator.

From that point on the audience will be invited to listen and keep silent.

Several persons will be involved in the teleconference:

- the responsible for ARISS Operations
- a moderator
- the ground station operator
- the school contact operator
- etc...

The ground station operator will start checking and fine-tuning the audio levels for the telebridge. He will invite the school contact operator to proceed to audio tests.

10 minutes before AOS (acquisition of signal) the ARISS moderator will start introducing the event over the phone. He will present the parties involved to the audience and comment the role each one is playing.

The schoolchildren/students will line up, queuing near the speakerphone. They will have their question on a sheet of paper, ready to read it into the microphone.

One minute before AOS the ground station operator will start calling the ISS. As soon as the radio contact is established, the ground station operator will turn over the microphone to the school operator.

The school operator will immediately extend the microphone to the first student for the first question.

As soon as the student has read his question, without forgetting the word "OVER", he leaves the front area while the next student lines up to the microphone.

When the astronaut has answered the question the school operator simply extends the microphone to the next student without a comment. The next student reads his question.

One minute before LOS (loss of signal), the ground station operator warns the school operator and invites him to stop the questions.

The school operator thanks the astronaut and invites the audience to send applause.

The ground station operator signs off the radio contact.

The moderator briefly comments the event, thanks the parties involved and closes the telebridge.

Remark: the number of questions that will be handled depends mainly on the length of the astronaut's answers, as well as of the quality of the radio link. The children/students and the audience shall be made aware of this before the contact.