

ARISS meeting Moscow 2008

Columbus Project



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Presented by Graham Shirville, G3VZV

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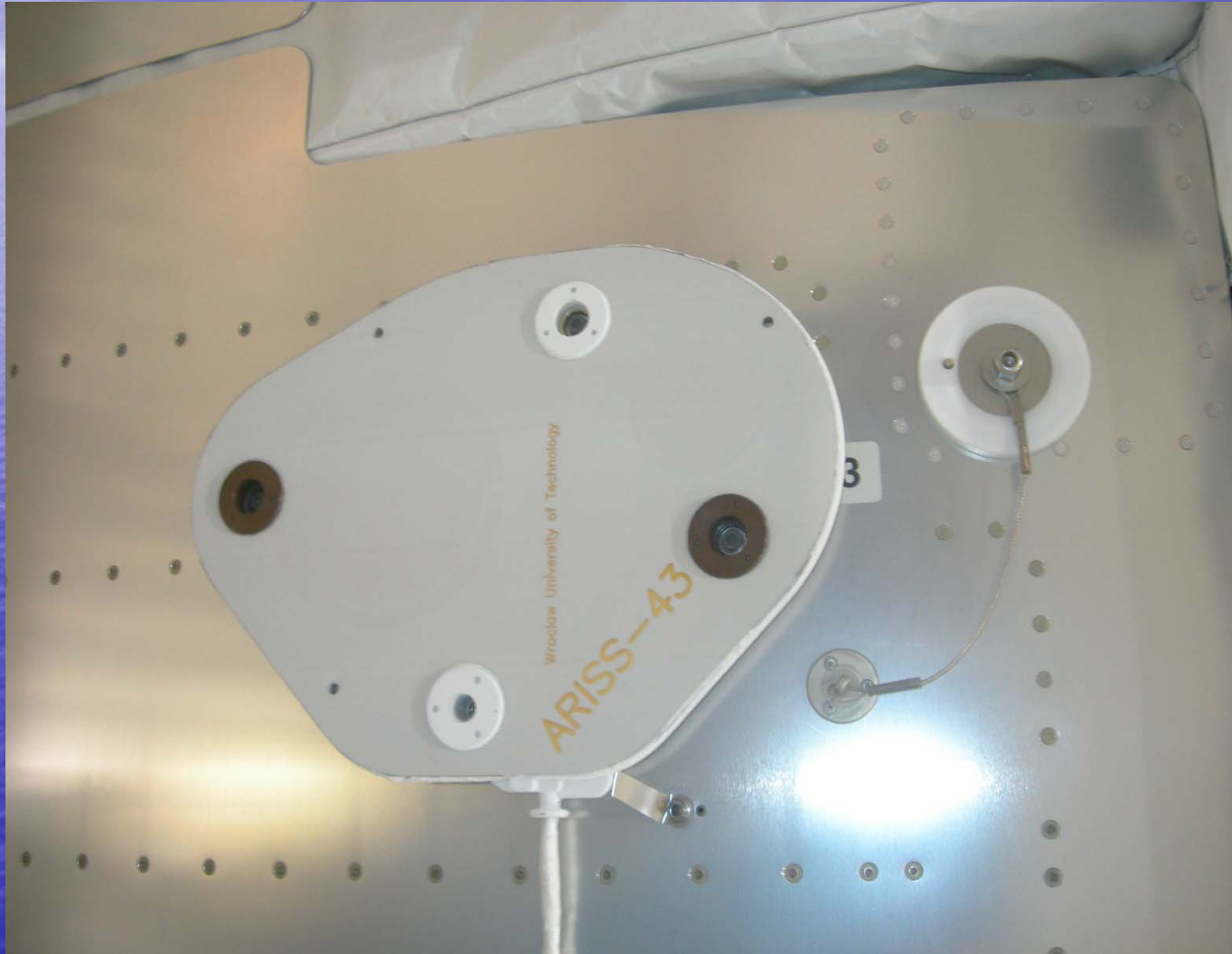
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Milestones

- 2002 : Gaston Bertels, ON4WF ARISS-Europe chairman, submits a request to ESA for Amateur Radio antennas on Columbus
- 2003 : first meeting with ESA and EADS engineers
- 2004 : Manufacturer Danny Orban, ON4AOD withdraws from the project
- 2005 : UBA signs a contract with Wroclaw University for L/S-band antennas development and manufacturing (47.000 €)
- 2006 : AMSAT Belgium signs a contract with Wroclaw University for qualification tests (3.000 €) – New constraints – ARISS-2x Antennas fail
- 2007 : March - UBA signs a contract with Wroclaw University for ARISS-3x Antennas (18.000 €) – vibration tests OK - thermal/vacuum tests NOK
- 2007 : August - UBA signs a contract with Wroclaw University for ARISS-4x Antennas (18.000 €)
- 2007 : October 9-10, ARISS-41 and ARISS-43 accepted and installed on Columbus
- Total cost : 86.000 €
- Still to be funded : 12.000 €

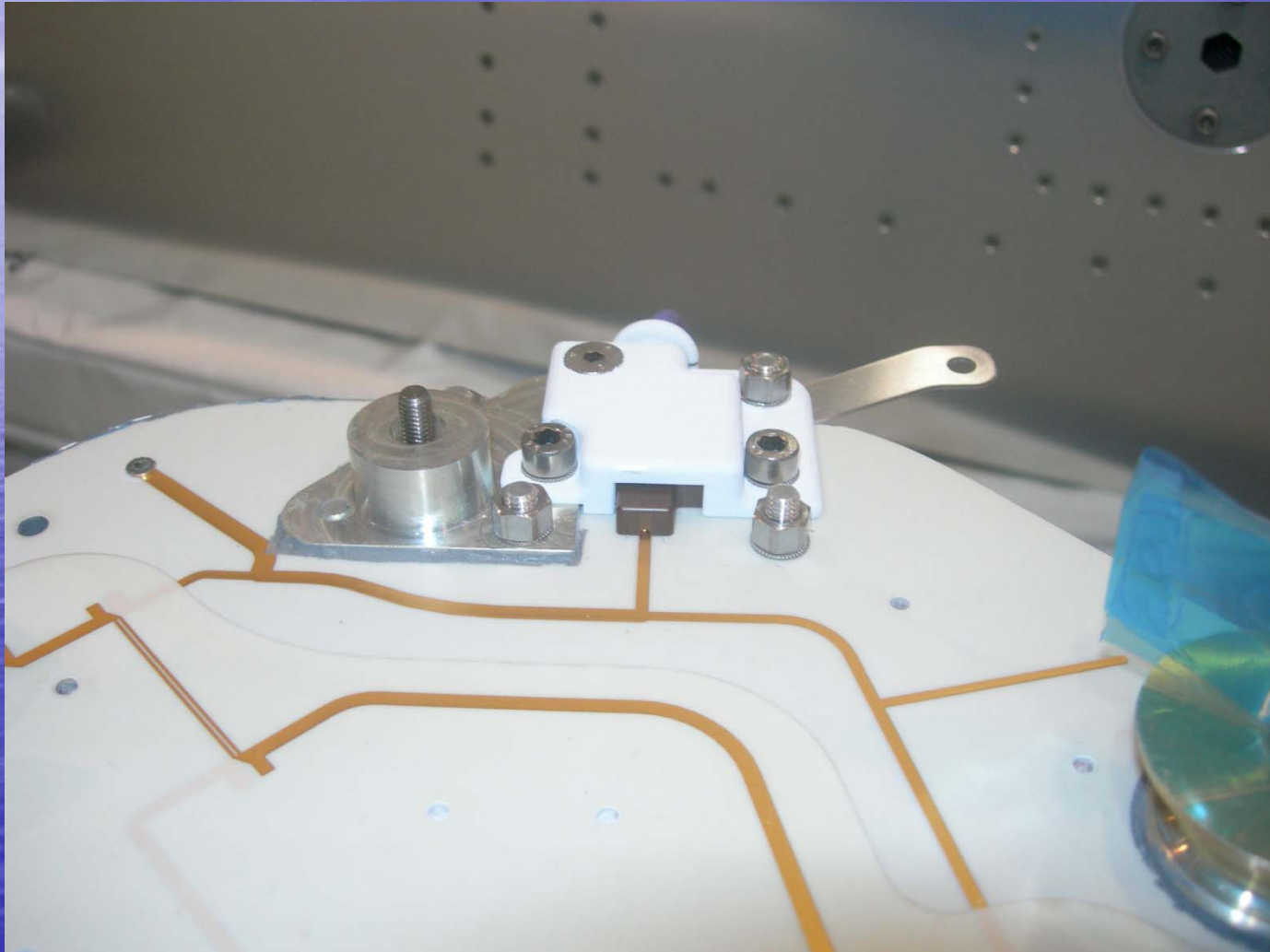
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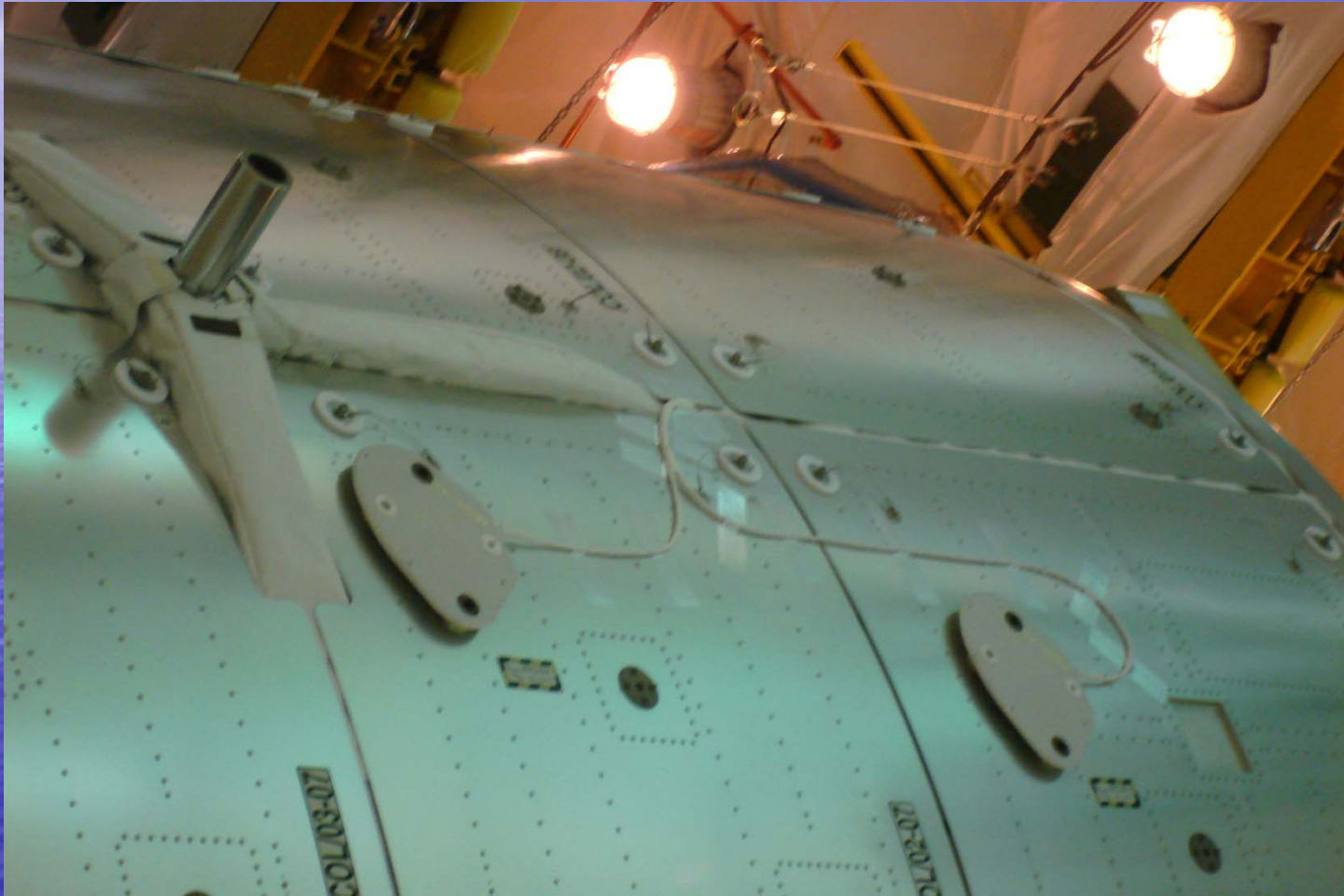
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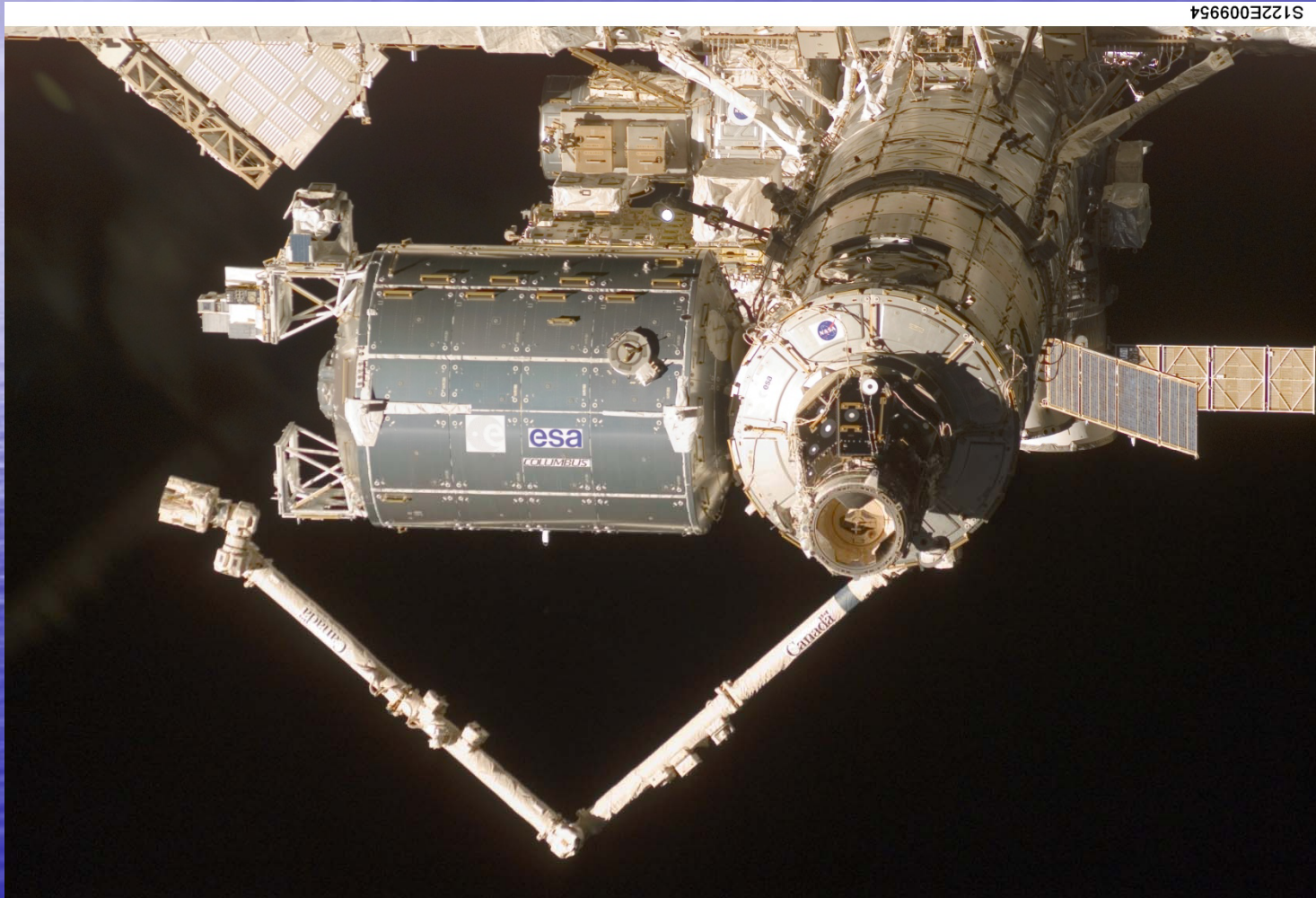
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Onboard Equipment

- At ARISS Meeting 2005 Guildford :
 - A Digital ATV project was presented for Columbus and
 - “the ARISS delegates voted unanimously to have a project committee set up by ARISS-Europe. This committee will develop within the next six months, a strategy, and they will present proposals regarding hardware systems for the *Columbus* module. Status updates will be given by the committee at each ARISS-I monthly teleconference”
- The project committee started work end 2005 but slowed down till October 2007 when getting antennas installed became less uncertain. P&U Committee chairman participated to the teleconferences. Recently, the project committee was called ARCOL.
- The project is to develop :
 - A wideband transponder
 - (D)ATV capabilities (at least on downlink)
 - Possibly an initial (commercial) equipment
- Two debates are going on :
 - Analog versus Digital ATV
 - Wroclaw University proposal versus Amateur Only

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Analog versus Digital ATV

- Supporters of Analog ATV argue that most ATV stations use the analog system
- Supporters of DATV put forward progressive techniques and better Doppler stability
- Gaston, ON4WF asked the advice of donating societies :
 - British Amateur Television Club (BATC)
 - Arbeitsgemeinschaft Amateurfunkfernsehen (AGAF)
 - Swiss ATV Association

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Wroclaw University proposal

- Dr Pawel Kabacik, Wroclaw University professor who developed the ARISS antennas for Columbus, proposes to use special ESA funds provided for research under the PECS agreement :
"The Plan for European Cooperating States (PECS) is designed to help European countries, particularly those that joined the EU after 2004, to join ESA. At present, Hungary, the Czech Republic and Romania have signed a PECS Charter and Poland is scheduled to sign by April 2008.

PECS is helping to stimulate relations with interested European countries, to expand the overall European scientific and industrial base and to enrich ESA as a research and development organisation".
- The transponder and DATV system would be developed by Wroclaw Master students
- For the initial equipment, Rohde&Schwarz is possibly interested in adapting a professional transceiver to the amateur bands.

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Further steps

- The principle of installing in the ISS Columbus module a wideband L/S-band transponder and to provide also (D)ATV facilities, at least on downlink, has been submitted for approval to ARISS S&U Committee.
- ESA Columbus Management has been informed that ARISS intends to install Amateur Radio equipment on Columbus and put the antennas in use.
- ESA Columbus Management have suggested simple surface mounted equipment, max 40+C surface temps and approx 10 watts RF. They have accepted, in conceptual terms, the idea for transponder use and control from ground but with crew override.
- The RF power limit suggests a 200kb webcam type video and audio system for downlink
- We need to have urgent confirmation that there is an on board wifi system, and if so what channel it is on☺
- The possibility of a U/V whip antenna installation on the Columbus module completely changes the options that we might consider.
- ARISS-EU accept that we need to move ahead with speed and efficiency to satisfy ESA's expectations and to justify their on-going support
- Subject to approval by the ARISS Selection and Use Committee, ARCOL intends to continue Project feasibility studies, technical and financial
- ***Thank you for your attention!***