THE INTERNATIONAL SPACE STATION

Lynn F.H. Cline
Deputy Associate Administrator
Space Operations Mission Directorate
National Aeronautics and Space Administration
Historic Context

- CANADA, EUROPE & JAPAN JOIN (1988 Agreements)
- RUSSIA JOINS (1998 Agreements)

U.S. PRESIDENTIAL ANNOUNCEMENT
25 January, 1984

U.S. PRESIDENTIAL ANNOUNCEMENT
14 January, 2004


CD
PD
FD
PRR 1988
PDR 1990
CDR 1993
FEL 1998
CREW 2000
ASSEMBLY COMPLETE 2010
DESIGN CERTIFICATION EXTENSION

Shuttle/Mir

DEVELOPMENT

ORBITAL ASSEMBLY

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The International Space Station Partners

Canadian Space Agency

European Space Agency

Japan Aerospace Exploration Agency

National Aeronautics and Space Administration

Russian Federal Space Agency
ISS Operations Centers
27 ISS Expeditions

Over ten years of continuously crewed flight operation

November 2000…

June 2011
Upcoming Missions

SOYUZ 27S/TMA-02M
• Launching June 7/8, 2011
• ISS Crew Rotation

SPACE SHUTTLE ATLANTIS / STS-135
• Launching July 8, 2011
• Final Flight of the Space Shuttle Program
Figure 1: High resolution TEM image of a crystalline zirconium alloy. The bright spots are long rows of atoms, viewed end-on. Notice how these spots are very regularly arranged, proving that this material has a crystalline structure.

Figure 2: High resolution TEM image of an amorphous zirconium alloy. In contrast to Figure 1, the spots are randomly arranged, which tells us that this material is noncrystalline.
Liquidmetals® (metallic glasses)

Figure 3: Comparative yield strength (ksi) of cast alloys with Zr-base Liquidmetal® alloy (http://www.liquidmetal.com/technology/).

Figure 4: Comparative elastic limit (%) of metals with Zr-base Liquidmetal® alloy (http://www.liquidmetal.com/technology/).
ISS Research Accomplishments
Expeditions 0 – 24

- Expeditions 0 – 24
  - 303 U.S.O.S.-integrated investigations
    - 169 completed investigations
    - 110 International Partner investigations
    - 25 National Lab investigations
  - > 950 scientists
  - 310+ scientific publications (international count ongoing)

Number of Investigations, Expeditions 0 – 24

![Pie chart showing distribution of investigations involving NASA, ESA, CSA, and JAXA](chart.png)

- NASA, 186
- ESA, 52
- CSA, 15
- JAXA, 43
- NASA & ESA, 72
- 46

Scientific Disciplines
- Human Research
- Physical and Materials Science
- Education
- Technology
- Biology and Biotechnology
- Earth and Space Sciences

![Images related to ISS research](images.png)
ISS Research Accomplishments
Expeditions 25 – 26

- Expeditions 25/26
  - 121 U.S.O.S.-integrated investigations
  - 49 new investigations
  - 44 International Partner investigations
  - 25 National Lab investigations
  - > 360 scientists

![Number of Investigations, Expeditions 25/26](image)

Scientific Disciplines

- Human Research
- Physical and Materials Sciences
- Biology and Biotechnology
- Earth and Space Science
- Technology
- Education

![AMS-02](image)
![GeoFlow](image)
![Lego-Bricks](image)
![NanoRacks-CubeLabs](image)
![BXF-NPBX](image)
![tip (Earth)](image)
![Micro-g (space)](image)
The First Steps in Exploration...
The ISS at Schönbrunn Palace