



**RUSSIA IN SPACE:  
present situation and  
plans for future**

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# MAJOR RESULTS OF 2007

- Continued: working on the *Guidelines for Space Policy of the Russian Federation up to 2040*.
- Started: elaboration of the *Space Industry Development Strategy up to 2015* and of the *Federal Target Program of Utilization of Space Activities for Socio-Economic Development of the Russian Federation and its Regions*. Both documents are focused on further integration of the industry and broader use of the space applications by federal and local governments, businesses and private citizens.
- Establishment of three new integrated holdings, i.e. Makeev State Rocket Federal Center, Pilyugin Research and Production Federal Center, Precision Instrument-making Systems Research and Production Corporation, and further expansion of the Khrunichev Space Center. Thus, the overall number of the integrated structures in the rocket and space industry sector has reached 9 holdings.

# MAJOR RESULTS OF 2007 (cont.)

## *Launch activities*

- 26 space launches (USA–18, China–10, Europe–6, India–3);
- 35 spacecraft have been put into orbits, including 6 payloads under the Federal Space Program 2006–2015 and 29 commercial;
- 2 manned *Soyuzes* and 4 cargo *Progresses* launched to orbit under Russia's commitments on the International Space Station;
- 3 *GLONASS* navigational satellites launched to replenish the *GLONASS* constellation.
- *GLONASS* comprise 21 spacecraft, including 13 operational ones, 3 in pre-commissioning tests, 3 in maintenance and 2 about to be decommissioned;
- *At present Russian orbital constellation consists of 101 spacecraft.*
- Works started at Kourou space launch site in French Guyana in collaboration with Europe under the *Soyuz/Kourou* Project international project;
- Reconnaissance survey of the *Vostochny* launch center.

# PLANS FOR 2008

- Organizational management of construction works to be launched at the Vostochny launch site. The target year to start operations at the new launch site is 2020.

## *Launches of the following spacecraft:*

- *3 communications spacecraft of the Express series;*
- *Electro-L and Meteor-M meteorological spacecraft;*
- *Science: Spektr-R and Koronas-Foton;*
- *2 Soyuz-TMA manned ships and five Progress-M cargo craft to the ISS;*
- *6 GLONASS-M navigation spacecraft to replenish the constellation;*
- *2 satellites for COSPAS-SARSAT international rescue system*

# PERSPECTIVE CREW TRANSPORTATION SYSTEM

- Today the emphasis of upgrading of the “” *“Soyuz”* spacecraft
- Several design options of the Future *manned space system* are being considered, bids for the best design of the next generation will be completed in the 1st quarter of 2008. This advanced ship will be launched exclusively from Vostochny.
- Roscosmos is exploring opportunities with Europe of the joint venture on a perspective *manned space system* . Signing of the intergovernmental agreement for designing perspective manned space system between Russia and Europe is under discussion now.
- Roscosmos considers variants of bringing India into work on a perspective manned space system.

# INTERNATIONAL COOPERATION

- Roscosmos collaborates with 36 countries, it has bilateral intergovernmental cooperation agreements with 25 countries on 71 projects;
- Interagency agreements and MOU's
- International Space Station Program – assembly and scientific research
- Participation in international organizations – UNCOPIOS, GEOSS, COSPAR, IAF International Space Station Program
- International Earth observation and planetary research programs
- Joining the global satellite navigational systems
- Development of the Perspective Manned Transport System (PMTS) with ESA and JAXA(?)
- Commercial projects with international partners

# INTERNATIONAL COOPERATION (cont.)

- Roscosmos and NASA are engaged in a number of joint projects, including construction and operation of the ISS. Instruments developed by the Russian scientists will participate in several missions of NASA to the Moon and Mars;
- Cooperation with India is focusing on launch vehicles, on Indian participation in creating the GLONASS ground segment. Indian experts work in control centers in the Russian territory. India is interested in joining the work on the *Future manned space system*.
- Roscosmos realizes scientific projects with China, such as within the Russian program "FOBOS –Grunt".
- Interaction with South Korea on creating a new launch site and development of stages of the Korean rocket. In April the cosmonaut from South Korea should fly to the International space station.
- Roscosmos cooperates with France on construction of a launching pad in Guyana

# INTERNATIONAL SPACE STATION

- Russian segment of the ISS will be increased according to our international agreements. There will be 6 crew members on board the ISS, including 3 crew members on the Russian segment from 2009.  
In 2011 the station will already turn in a powerful scientific laboratory.
- Roscosmos plans to launch a laboratory module and auxiliary modules. Taking into account operating experience of the *Mir* station an accumulated experience of operations in orbit and the condition of the ISS Russia suggests to prolong its lifespan till 2020.
- Russia considers plans to build in orbit a new manned experimental assembly complex for maintenance of transport operations to the Moon and Mars.

# Moon and Mars

- Till 2015 Roscosmos plans only robotic missions to the Moon under the program "*Moon-Globe*". Around 2016 the Agency plans to start search of convenient for landing areas on the Moon surface. After 2026 manned missions to the Moon will commence;
- Development of the Moon will proceed through creation of permanent habitats to carry out astronomical and astrophysical research. In 2027–2032 manned base will be built and start operating.
- Current Russian space programs do not envisage for manned flight to Mars, and such expedition can be organized not earlier than 2035.