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## LAUNCH PAD

# Rockot Hopes To Make GRACE Launch A Breeze

Plesetsk - Feb 18, 2002

The launch of the NASA / DLR Grace satellites now tentatively scheduled for 15 March 2002 from Plesetsk Cosmodrome, will see Eurockot Launch Services, the joint venture owned by Astrium (51%) and the Russian company Khrunichev (49%), conduct its first commercial mission.



This event will also mark the inauguration of the commercial use of the Russian SS-19 ICBM which provides the two booster stages for the ROCKOT launch vehicle with a heritage of 150 flights.

The BREEZE - KM upper stage and ROCKOT payload fairing are also flight-proven. ROCKOT has a lift-off mass of 107 tons. It measures 29 metres height. ROCKOT will lift a maximum payload of up to 1,950 kg into highly inclined, polar and sun-synchronous low earth orbits.

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GRACE (Gravity Recovery and Climate Experiment) is a joint NASA / DLR (German Aerospace Centre) programme. The German Space Operations Centre of DLR will be responsible for GRACE mission management and operations.

Both spacecraft were manufactured by Astrium, Friedrichshafen with the German-Russian Eurockot company acting as the launch service provider and GFZ Potsdam, Germany's national centre for geosciences performing the scientific data evaluation.

Eurockot was the only commercial launch service provider to meet the launch requirements defined by DLR in an international invitation-to-tender.

Both GRACE spacecraft will measure the earth's gravitational field from an altitude of 500 km with a precision a hundred times more exact than systems used so far.

This degree of precision, combined with measurements recurring monthly will allow the exact definition of land masses and oceans and will thus contribute significantly to global

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## BEYOND BEYOND

# Distant Pioneer Sought Once More

Moffett Field - Feb 27, 2002



NASA scientists will try to contact Pioneer 10 this week to see if the plucky little spacecraft's signal can still be heard -

30 years after its launch. On March 2, 2002, scientists operating a radio telescope at JPL's Deep Space Network in Madrid will attempt to once again establish contact with the spacecraft after a silence of eight months.

## DRAGON SPACE

# Beijing Cites Technical Issues Delaying Third Shenzhou Test

Beijing (AFP) Feb 26, 2002



China indirectly confirmed Tuesday that the planned launch of a new spacecraft, the third in a series of unmanned flights designed to prepare the ground for sending an astronaut into

## SPACEDAILY EXPRESS

Feb 28, 2002

[Ariane 5 Ready To Launch Climate Monitoring Hub](#)

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[Distant Pioneer](#)

Sought Once  
More

climate research.

New  
Superconducting  
Transformer Is  
Light And  
Compact

Due to the complexity of their instrumentation, the design of the GRACE spacecraft required a relatively high volume payload fairing of the launch vehicle. ROCKOT features a fairing of over 6 metres height and 2.6 metres diameter.

Bones Point To  
5000 Years Of El  
Nino

These dimensions permitted a spacecraft size optimized for exact measurements. It also allowed an even mass distribution and twinning of the spacecraft, resulting in highly precise measurements of the gravitation by way of their speed differential.

Canadian PM  
rejects report  
saying Canada  
will lose 450,000  
jobs under Kyoto

DLR also required the design and manufacture of a customised spacecraft dispenser to mount the two GRACE spacecraft weighing 500 kg each. Under a subcontract to Eurokot, this dispenser was built by Astrium-owned RST Rostock System Technik.

Canada  
Reiterates  
Opposition To The  
Weaponization Of  
Space

The required precision of the spacecraft's separation in orbit is a demanding requirement: the BREEZE upper stage has to be stabilized in a defined attitude prior to releasing the spacecraft. Once this is achieved, they are released with an accurately adjusted separation velocity.

Designing  
Smarter, More  
Robust  
Unmanned  
Vehicles

The BREEZE - KM meets these requirements, as it is equipped with re-ignitable engines: these allow the upper stage to be precisely positioned into different attitudes, releasing several spacecraft successively.

Hughes Network  
Systems Hits  
2001 Target With  
8 Million Homes

ROCKOT will deploy the GRACE satellites into a circular orbit of 89 degrees inclination and a 500 km altitude with a very high and proven injection accuracy. They will be released in parallel into opposing directions. Following the spacecraft's release, BREEZE will fully de-orbit., leaving no debris.

ROCKOT is launched from Plesetsk Cosmodrome, 800 km northeast of Moscow, where modernized and dedicated launch facilities are used by Eurokot following a substantial investment of more than USD 40 million by Astrium.

All facilities comply with international standards. Customers have at their disposal payload processing, integration facilities and their own offices. All facilities, including the new Mission Control Centre were commissioned in May 2000. The clean room corresponds to class 100,000 cleanliness. Cold gas fuelling is also available.

Customer personnel is accommodated in a newly converted hotel of international standard in Mirny, the town adjacent to Plesetsk. It features conference rooms, modern amenities and communication systems.

Eurokot Launch Services was originally founded in 1995 by Dasa (today Astrium) holding 51 percent and Khrunichev Space Centre, Moscow, holding 49 percent, to provide launch services to operators of LEO (Low Earth Orbit) satellites. Eurokot is based in Bremen, Germany and serves the commercial as well

space, had been delayed. Many space experts had expected the launch of the Shenzhou 3 in January.

- Tracking Fleet Continues Rehearsal
- Young Helmsmen Ready To Command Shenzhou
- China Eyes Territorial Claim Of Outer Space

#### TECH SPACE

### Designing Robust Unmanned Vehicles

Blacksburg - Feb 28, 2002



With spinning wheels, moving masses, and \$675,000 awarded recently in research grants, Craig

Woolsey of Virginia Tech aims to help improve the maneuverability, robustness and reliability of underwater, air, and space vehicles.

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#### ROCKET SCIENCE

as scientific and agency market segments by using the flight-proven ROCKOT launch system.

Eurockot has an order backlog of six launches from international customers to deploy their scientific and commercial satellites. Marketing activities are concentrated in Europe, Asia and North America.

Following GRACE, Eurockot's next mission is scheduled for June 2002. This will be a dual launch of IRIDIUM replacement satellites for the US constellation. Eurockot also recently gained a contract to launch the Japanese SERVIS - 1 satellite in 2003. This contract marks Eurockot's debut in the Asian market.

Eurockot will also perform a multiple payload ("piggyback") launch at the end of 2002, deploying the scientific MOST satellite for the Canadian Space Agency together with the Czech Republic Astronomical Institute's MIMOSA satellite.

Furthermore, two contracts exist with an undisclosed customer for launches in 2003 and 2004.

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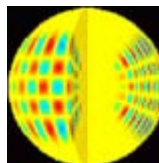

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#### LAUNCH PAD

### Canada's First Space Telescope to Ride a "Rockot"

Saint-Hubert - Nov 20, 2001

The Canadian Space Agency (CSA) and Eurockot Launch Services of Bremen, Germany, today announced the signing of a Launch Service Agreement for Canada's MOST (Microvariability & Oscillations of STars) microsatellite. MOST, carrying Canada's first space telescope, is scheduled to be launched in October 2002 as part of a multiple payload mission from Plesetsk, Russia, on an SS-19 based launch vehicle called Rockot.



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