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Russia Botches Return to Deep Space

By Alexander Bratersky

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The Zenit-2SB rocket, carrying the unmanned Fobos-Grunt probe, preparing to lift off Wednesday in Baikonur. **Oleg Urusov**

Correction: An earlier version of this article incorrectly stated that Russia does not have a single scientific satellite in operation. In fact, it has two: Spektor-R and Resurs-DK.

Russia's first attempt to return to deep space since 1996 teetered on the brink of failure Wednesday, when an unmanned probe to a Mars moon proved unable to position itself in orbit for an interplanetary flight.

Officials with the Federal Space Agency said the situation still can be salvaged by reprogramming the probe, Fobos-Grunt, but industry sources said the chances of success are minimal.

The incident is the latest in an embarrassingly long string of launch failures, which can be blamed on chronic underfunding of a Russian space industry staff that lacks young specialists, an analyst told The Moscow Times.

A Ukrainian-made Zenit rocket successfully brought Fobos-Grunt to orbit after a launch from the Baikonur cosmodrome in Kazakhstan early Wednesday, the space agency said.

But the 14-ton probe failed to position itself for a flight to Phobos, one of Mars' two moons, the report said. It remains now parked in the low Earth orbit from which deep space probes are launched to their destinations.

The problem was with the probe's solar-powered engines, which did not activate, Federal Space Agency head Vladimir Popovkin told reporters early Wednesday.

Popovkin said initially that ground control has until Saturday to reprogram Fobos-Grunt for a new flight trajectory, but his agency later said in a statement that the deadline before the probe is lost is two weeks. An unidentified source at the agency told RIA-Novosti that the probe can stay in its orbit for up to a month before it re-enters the atmosphere.

If that happens, the probe is too heavy to burn on re-entry, and its debris may reach the ground, another space industry source told Interfax.

Given the 7 tons of rocket fuel on board, Fobos-Grunt may be the most toxic manmade object ever to fall back to Earth, space consultant James Oberg, who used to work for NASA, claimed in a letter to The Associated Press.

Popovkin said the problem was anticipated at the preparation stage, and space engineers have plans to rescue the probe.

The next contact with the probe was scheduled for late Wednesday, when ground control expects to receive data explaining why the engines did not kick in. A new launch would only be possible if the failure were due to a programming error, not an equipment malfunction.

The problems came as no surprise to engineers, a source in the Russian space industry told Interfax.

"Specialists have warned that the control system hadn't been thoroughly tested," he said.

The probe is "unlikely" to survive, Ivan Moiseyev, a senior researcher at the Institute of Space Policy, told The Moscow Times on Wednesday. He was echoed by the Interfax source who said salvaging the probe "would be a miracle."

The mission's goal was to shed light on the origin of Mars' moons by bringing back 200 grams of ground samples from its 34-month flight among other tests.

It also was to carry more then 100 "biological objects," including mosquito eggs and crustacean embryos to Phobos and back, to see how they survive the trip, Vladimir Sychev, a biologist with the Russian Academy of Sciences, told Komsomolskaya Pravda.

The probe was insured for its full cost of 1.2 billion rubles ($39 million), with the Russian Insurance Center, Popovkin said. But he added that the total cost of R&D that went into the project was 5 billion rubles ($164 million).

He also conceded that "if the station is lost, it will be a big blow to prestige" of the agency.

He should know, given that the failures have already cost the job of his predecessor, Anatoly Perminov, who was replaced by Popovkin, a former deputy defense minister, in April.

Perminov's career ended after the loss of three telecom satellites in the much-touted Glonass navigation program, which plummeted into the Pacific in December.

Glonass' failure was predated by a string of incidents in 2010, but the situation did not change for the better this year, which saw four more unsuccessful launches, including the loss of an unmanned Proton rocket bound for the International Space Station with a cargo of supplies. Launches of Protons — which are currently the only means to reach the space station — were suspended for two weeks in August following the incident.

Popovkin said earlier that his agency "understood the risk" of the Fobos-Grunt mission.

"But we should've gone for it, otherwise we'd have had to admit that we're running behind [all rivals]," he said, RBC Daily reported.

Indeed, even China, which always lagged behind Russia in the space race, is now breathing down its neck. Last week, two Chinese unmanned spacecraft successfully docked in orbit, completing a vital step in the plan to launch a Chinese manned orbital station to rival the ISS.

Russia currently operates two scientific satellites. The Phobos exploration mission became the country's first to a Mars moon in 15 years. The previous attempt in 1996 also ended in failure, caused by a malfunctioning booster.

Moiseyev of the Institute of Space Policy said the Phobos mission's issues indicated deep-running problems of the Russian space research industry, which lacks young minds.

"We don't have an ideology for that. Now, in the United States, people understand that it's prestigious and serious work, but here the situation is different," he said.

He echoed many other industry representatives who have repeatedly pointed out in recent years that the salaries in the industry are too low, which is why most staffers have been working in the field since the Soviet times and are long past retirement age.

Popovkin, of the Federal Space Agency, said Wednesday that the mission was actually meant as a draw to young minds.

"About 40 percent of staff at the [aerospace research institute] NPO Lavochkin are under 35, and they have worked at this program," he said, Gazeta.ru reported.

But the industry still does not seem poised to offer competitive salaries. Two job vacancies at the NPO Lavochkin site on Wednesday asked for experienced engineers to work on small satellites for 20,000 rubles a month ($650) — less than half of what a train operator makes in the Moscow metro.

The Soviet Union dispatched 16 missions to Mars between the 1960s and the 1980s, but only five of them were successful. That contrasts with Venus exploration, where, after a number of initial failures, the Soviets launched more than a dozen successful probes, the last two in 1984-86.

This prompted Moiseyev from the Institute of Space Policy to offer a philosophic explanation for the Phobos mission failure.

"Mars is not our planet. Venus was always more successful for us," he said.

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