

Defects Found in Almost Every Russian Proton Rocket Engine

Russian rockets are crashing at an astonishing rate. Engine defects abound.

By [Matthew Bodner](#)

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Maxim Stulov / Vedomosti

An investigation into quality control issues in the Russian space industry has discovered that nearly every engine currently stockpiled for use in Proton rockets is defective, the RIA Novosti news agency reported March 30, citing Igor Arbuzov, head of state rocket engine manufacturer Energomash.

71 engines, mostly used to power the second and third stages of the Proton rocket, require complete overhauls to remove defects. Arbuzov did not specify what was wrong with the

engines. In January, Interfax reported on an investigation into high-quality metals swapped by a plant manager for cheaper alternatives.

"Most of the work will be done in 2017, but we understand that some portion will inevitably slip into 2018," Arbutov said. "Our main goal is to avoid disrupting the government space program's launch schedule, or the schedules of the Defense Ministry and commercial customers."

Proton, a Soviet-designed rocket that has flown since the late 1960s, was once considered to be the most reliable rocket in the world. Since 1967, the design has been launched 400 times, and at one point was used to launch some 30% of commercial satellites into space.

But over the past decade, Proton's reliability and that of the Russian space industry as a whole has been thrown into sharp question amid a series of spectacular launch failures. The problem goes beyond engines, pointing to a general quality control crisis across multiple factories and rocket designs.

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One of Proton's most infamous disasters came in 2013, when one of the rockets flipped over almost immediately after launch - driving itself into the ground. The fault was later identified to be a sensor that was installed upside down. The rocket's computer believed the rocket was facing the wrong way.

An investigation was launched into workers at the plant where Proton rockets are manufactured, resulting in a factory worker [being charged in 2015](#) for violating construction safety codes.

"The sensors fit in special slots, and thanks to this they can only be installed in one position," an unidentified source told Izvestia at the time. "However, if you apply force, a sensor can be put into the space upside down," he said.

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