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The Media's Russian Radiation Story Implodes Upon Scrutiny

What really happened at Nenoska was less explosive than everyone, including Trump, wanted you to believe.

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How the mainstream media reported an August 8 accident at a top-secret missile test facility in northern Russia should serve as a cautionary tale regarding the dangers of rushed judgments via institutional bias.

In the days following the initial report of the accident, the media exploded with speculation over both the nature of the device being tested at the Nenoksa State Central Marine Test Site and the Russian government's muted response. Typical of the hysteria was the analysis of Jeffrey Lewis, director of the East Asia Nonproliferation Program for the James Martin Center for Nonproliferation Studies and editor of the blog "Arms Control Wonk."

Lewis and his collaborators penned a breathless article for Foreign Policy that asked, "What Really Happened?" According to Lewis, the answer was clear:

> "The reference to radiation was striking—tests of missile engines don't involve radiation. Well, with one exception: Last year, Russia announced it had tested a cruise missile powered by a nuclear reactor. It calls this missile the 9M730 Burevestnik. NATO calls it the SSC-X-9 Skyfall."

Lewis's assessment was joined by President Trump's, who tweeted,

> "The United States is learning much from the failed missile explosion in Russia…. The Russian 'Skyfall' explosion has people worried about the air around the facility, and far beyond. Not good!"

> The United States is learning much from the failed missile explosion in Russia. We have similar, though more advanced, technology. The Russian "Skyfall" explosion has people worried about the air around the facility, and far beyond. Not good!
>
> — Donald J. Trump (@realDonaldTrump) August 12, 2019

Trump's tweet appeared to conform with the assessments of the intelligence community, which, according to *The New York Times*, also attributed the accident to a failed test of the Skyfall missile.

Former Obama administration national security analyst Samantha Vinograd tweeted:

> "Possibly the worst nuclear accident in the region since Chernobyl + possibly a new kind of Russian missile = this is a big deal."

The Washington Post editorial board joined Vinograd in invoking the imagery of Chernobyl:

> "If this slow dribble of facts sounds familiar, it is — the same parade of misdirection happened during the Chernobyl nuclear disaster in 1986."

They're all wrong. Here's the real story of what actually happened at Nenoksa.

Liquid-fuel ballistic missiles are tricky things. Most Russian liquid-fueled missiles make use of hypergolic fuels, consisting of a fuel (in most cases asymmetrical dimethylhydrazine, or heptyl) and an oxidizer (nitrogen tetroxide), which, when combined, spontaneously combust. For this to happen efficiently, the fuel and oxidizer need to be maintained at "room temperature," generally accepted as around 70 degrees Fahrenheit. For missiles stored in launch silos, or in launch canisters aboard submarines, temperature control is regulated by systems powered by the host—either a generator, if in a silo, or the submarine's own power supply, if in a canister.

Likewise, the various valves, switches, and other components critical to the successful operation of a liquid-fuel ballistic missile, including onboard electronics and guidance and control systems, must be maintained in an equilibrium, or steady state, until launch. The electrical power required to accomplish this is not considerable, but it must be constant. Loss of power will disrupt the equilibrium of the missile system, detrimentally impacting its transient response at time of launch and leading to failure.

Russia has long been pursuing so-called "autonomous" weapons that can be decoupled from conventional means of delivery—a missile silo or a submarine—and instead installed in canisters that protect them from the environment. They would then be deployed on the floor of the ocean, lying in wait until remotely activated. One of the major obstacles confronting the Russians is the need for system equilibrium, including the onboard communications equipment, prior to activation. The power supply for any system must be constant, reliable, and capable of operating for extended periods of time without the prospect of fuel replenishment.

The solution for this power supply problem is found in so-called "nuclear batteries," or radioisotope thermoelectric generators (RTG). An RTG generates electricity using thermocouples that convert the heat released by the decay of radioactive material. RTGs have long been used in support of operations in space. The Russians have long used them to provide power to remote unmanned facilities in the arctic and in mountainous terrain. Cesium-137, a byproduct of the fission of U-235, is considered an ideal radioisotope for military application RTGs.

On August 8, a joint team from the Ministry of Defense and the All-Russian Research Institute of Experimental Physics, subordinated to the State Atomic Energy Corporation (ROSATOM), conducted a test of a liquid-fueled rocket engine, in which electric power from Cesium-137 "nuclear batteries" maintained its equilibrium state. The test was conducted at

the Nenoksa State Central Marine Test Site (GTsMP), a secret Russian naval facility known as Military Unit 09703. It took place in the waters of the White Sea, off the coast of the Nenoksa facility, onboard a pair of pontoon platforms.

The test had been in the making for approximately a year. What exactly was being tested and why remain a secret, but the evaluation went on for approximately an hour. It did not involve the actual firing of the engine, but rather the non-destructive testing of the RTG power supply to the engine.

The test may have been a final system check—the Russian deputy defense minister, Pavel Popov, monitored events from the Nenoksa military base. Meanwhile, the deputy head of research and testing at the All-Russian Research Institute of Experimental Physics, Vyasheslav Yanovsky, considered to be one of Russia's most senior nuclear scientists, monitored events onboard the off-shore platform. Joining Yanovsky were seven other specialists from the institute, including Vyacheslav Lipshev, the head of the research and development team. They accompanied representatives from the Ministry of Defense, along with specialists from the design bureau responsible for the liquid-fuel engine.

When the actual testing finished, something went very wrong. According to a sailor from the nearby Severdvinsk naval base, the hypergolic fuels contained in the liquid engine (their presence suggests that temperature control was one of the functions being tested) somehow combined. This created an explosion that destroyed the liquid engine, sending an unknown amount of fuel and oxidizer into the water. At least one, and perhaps more, of the Cesium-137 RTGs burst open, contaminating equipment and personnel alike.

Four men—two Ministry of Defense personnel and two ROSATOM scientists—were killed immediately. Those who remained on the damaged platform were taken to the Nenoksa base and decontaminated, before being transported to a local military clinic that specializes in nuclear-related emergencies. Here, doctors in full protective gear oversaw their treatment and additional decontamination. All of them survived.

Three of the ROSATOM scientists were thrown by the explosion into the waters of the White Sea and were rescued only after a lengthy search. These men were transported to the Arkhangelsk hospital. Neither the paramedics who attended to the injured scientists, nor the hospital staff who received them, were informed that the victims had been exposed to Cesium-137, leading to the cross-contamination of the hospital staff and its premises.

The next day, all the personnel injured during the test were transported to Moscow for treatment at a facility that specializes in radiation exposure; two of the victims pulled from the water died en route. Medical personnel involved in treating the victims were likewise dispatched to Moscow for evaluation; one doctor was found to be contaminated with Cesium-137.

The classified nature of the test resulted in the Russian government taking precautions to control information concerning the accident. The Russian Federal Security Service (FSB) seized all the medical records associated with the treatment of accident victims and had the doctors and medical personnel sign non-disclosure agreements.

The Russian Meteorological Service (Roshydromet) operates what's known as the Automatic Radiation Monitoring System (ASKRO) in the city of Severdvinsk. ASKRO detected two "surges" in radiation, one involving Gamma particles, the other Beta particles. This is a

pattern consistent with the characteristics of Cesium-137, which releases Gamma rays as it decays, creating Barium-137m, which is a Beta generator. The initial detection was reported on the Roshydromet website, though it was subsequently taken offline.

Specialized hazardous material teams scoured the region around Nenoksa, Archangesk, and Severdvinsk, taking air and environmental samples. All these tested normal, confirming that the contamination created by the destruction of the Cesium-137 batteries was limited to the area surrounding the accident. Due to the large amount of missile fuel that was spilled, special restrictions concerning fishing and swimming were imposed in the region's waters — at least until the fuel was neutralized by the waters of the White Sea. The damage had been contained, and the threat was over.

The reality of what happened at Nenoksa is tragic. Seven men lost their lives and scores of others were injured. But there was no explosion of a "nuclear cruise missile," and it wasn't the second coming of Chernobyl. America's intelligence community and the so-called experts got it wrong — again. The root cause of their error is their institutional bias against Russia, which leads them to view that country in the worst possible light, regardless of the facts.

At a time when the level of mutual mistrust between our two nuclear-armed nations is at an all-time high, this kind of irresponsible rush to judgement must be avoided at all costs.

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