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How do you find a nuclear-powered missile that's lost at sea?

'Since this thing is nuclear powered, supposedly, one question of course is, has it leaked radiation?'

By Rachel Becker | Aug 21, 2018, 7:53pm EDT

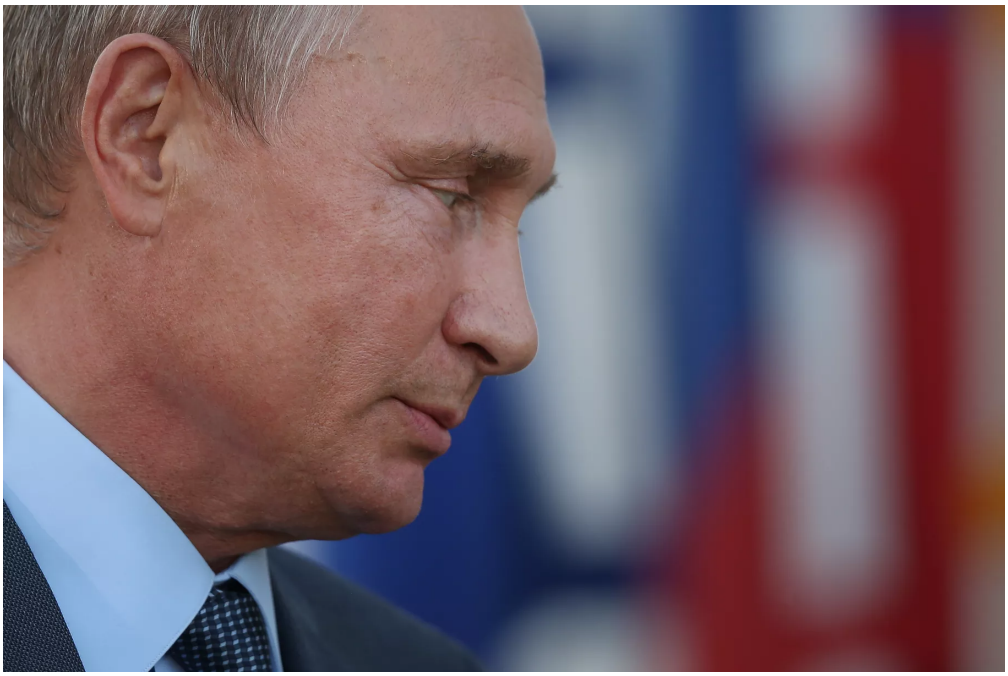

Photo by Sean Gallup/Getty Images

Moscow is hunting for a nuclear-powered missile that went missing during a test last year, CNBC reported today.

In March, Vladimir Putin announced that Russia was developing a cruise missile powered by a nuclear reactor. The idea was that it would "be able to fly all around the world and navigate around missile defense systems and make its way to a target — even if it's on the other side of the planet," says Hans Kristensen, a nuclear weapons expert with the Federation of American scientists.

But so far, all four tests of the missile have ended in crashes, according to the anonymous sources who spoke to CNBC. And now, Moscow is reportedly searching for one missile that disappeared into the Barents sea north of Russia in November.

The missile wouldn't have carried a nuclear warhead. ("You obviously do not conduct a test that way," says Joshua Pollack, an arms control expert at the Middlebury Institute of International Studies, or MIIS.) But it supposedly did have an onboard nuclear reactor to power its flight — which CNBC says never initiated.

That could complicate recovery efforts. But first, Moscow will have to *find* the sunken missile — and *The Verge* spoke with Kristensen about how. "Intelligence officials have told journalists that Russia is trying to salvage this weapon, so presumably they know where it is, or the general area," Kristensen says. "And then we'll see what happens."

This interview has been edited for clarity and brevity.

How do you go about finding a lost missile?

Sometimes test missiles have a pinger on board where it sends out a signal that can be picked up, and you can locate it. This has advantages and disadvantages. The advantage is that you can get to it relatively quickly but the disadvantage is of course that any potential adversaries that may be snooping around in the same area with special submarines can also hear it, and could steal it perhaps. But if they don't have that, then if they only know the general area where it crashed they have to go out with search vessels and underwater drones that beam out electronic signals, and see if something bounces back — a signature of that particular weapon on the bottom.

And then once you've located it, you have to get something down to it. It could be a special salvage submarine that has particular arms, or features that you can attach to such a missile on the seafloor, and then you slowly raise it to the surface and lift it on board a ship, and put it in a container. But, of course, since this thing is nuclear powered supposedly, one question of course is, has it leaked radiation? Is there a leak going on right now on the bottom? Was it damaged so much that material is leaking out? Or is it still intact, and they can bring it up relatively intact and salvage it that way?

How would a leak complicate recovery efforts?

Well it would contaminate the missile and anyone potentially that is involved in salvaging it. In the ocean, it's one thing, if you will — because there's a lot of ocean water and it dilutes the pollutants. But as soon as you bring it up, depending on the type of damage, you can have an immediate radiation exposure depending on the radioactive material that's in it.

We don't know very much about what that might be... You have to presumably have a fair amount of radioactive material on board. That can of course get out if it's been destroyed — if there's a crack or destruction of the engine system. And then, of course, as you bring it out of the water, the people that are in contact with it can get the contaminants on them, or inhale them. So it can very quickly become a very tricky operation.

Has this ever happened before?

Not a nuclear-powered missile, to my knowledge. The US did some experiments with nuclear powered cruise missiles back in the 1950s or 60s but very quickly moved away from it. It didn't pay off, and it was too complex and messy, and of course, once you fly this thing, sooner or later it's going to land — and then you have that problem with radioactive pollution. That never happened. Conventional engines were good enough to do the job.

But there have been [experiences] when nuclear powered submarines have sunk in the ocean, there's about half a dozen to a dozen of them out there that have been lost over the years and some of them had nuclear weapons on board. In a couple of those cases they had salvaged that submarine and brought it to the surface again. There was an example just a few years ago with the Russian submarine Kursk that had a severe explosion on board, a weapon exploded and the submarine sunk in the Barents sea, and the submarine was raised again and brought onto land. In that situation you potentially have pollution from that reactor if its coolant system or piping system had been damaged, breached, in one way or another. So there is some experience with handling potentially nuclear materials salvaged from the ocean.