

North Korea May Have Miniaturized a Nuclear Warhead

SEOUL (Reuters) - North Korea has probably succeeded in miniaturizing a nuclear device, South Korea's defense minister said on Monday, an advance that would in theory allow the hermit state to place an atomic warhead on a rocket.

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Kim Kwan-jin offered no evidence to back his assertion but said the North had had enough time for such a development.

"It has been quite a while, enough time for them to have succeeded in miniaturization," he told a parliamentary defense committee.

If true, it would mark a key advance in the North's drive to develop a functioning nuclear weapon though that threat appears to be potential rather than actual.

<http://ca.news.yahoo.com/n-korea-likely-miniaturize-nuclear-device-seoul-094309294.html>

Analysis. Building a nuclear “device”, a test bomb that can't be used as a weapon, is difficult enough. Building one small enough to fit inside a missile nose cone or a case to be used as a gravity bomb is orders of magnitude more difficult. Machining the uranium into a usable shape is tricky. The shape must usually be made in parts so you don't have enough fissile material in one place to start a chain reaction. When brought together the parts must fit exactly.

Most nuclear weapons these days are of the implosion type. The fissile material, uranium 235 or plutonium 239, is machined into the proper shape. It is then covered with specially designed chunks of high explosive. Detonators are then inserted into the high explosives. The design and sequencing of the high explosives must be such that the fissile material ends up in a very small ball and goes “boom”. If one or two chunks of explosive don't go off or go off at the wrong time, you can shatter the fissile material and the bomb goes “dud”.

You can practice making shapes of uranium 238 that does not go boom but is physically equal to Uranium 235 for machining purposes. Both the North Koreans and the Iranians have ample supplies of Uranium 238 AKA depleted uranium. I suspect that they have been practicing for a long time on the cheap stuff and saving the good stuff for when they can consistently compress a bunch of uranium into a very small ball. The amount of explosive required for this wouldn't even register on a seismometer.

As reported here 9 June 11, the Iranian Revolutionary Guards Corps (IRGC) has taken delivery of two nuclear capable missile warheads. That report should be considered in conjunction with this one as two complementary parts of the same weapons program. I tend to doubt that the IRGC would have taken delivery of warheads without having specified design parameters around some already known physics package. To me that increases the probability of this report being correct while concealing sources and methods.

I stand by my earlier prediction that North Korea will test a nuclear weapon by the end of this month. I also strongly suspect that Iran is currently enriching uranium above the 20% level and some undisclosed location. Events in Syria over the last few months have probably increased the priority of obtaining functioning nuclear weapons for offensive and defensive purposes.