

The Cheonan Incident and the Continued International Isolation of North Korea

Two years on, scientists refuse to cease questioning Cheonan sinking

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The sinking of the South Korean anti-submarine corvette Cheonan has been a key reason for the ongoing international isolation of North Korea and contributed significantly to the [increased tensions](#) on the Korean peninsula in 2010. But doubters of the official explanation continue to resurface.

The South Korean government-commissioned Joint Investigation Group (JIG) said it was irrefutable that a North Korean submarine sank the South Korean vessel with a torpedo on March 26, 2010, killing 46 navy members. However, the debate has been reignited in South Korea over the last two months because scientists have persistently questioned the JIG report.

In late April this year, Dr. Kim Gwang-sop, former rotational program manager at the National Science Foundation in Washington DC, was invited to do a presentation about the JIG report at a Korean Institute of Chemical Engineers conference. His lecture was cancelled at the last minute because the institute told him it was "[too political](#)."

Dr. Kim said cancelling a scientific lecture for political reasons is unprecedented for a non-profit scientific organization.

"As far as I know, no scientific societies have committed such blatant misconduct as the KICChE," he said via email.

He isn't the only scientist who has been unable to contribute to the now two-year-old Cheonan debate. Dr. Sam Ahn (Ahn Soo-myong), whose American-based company Ahntech specializes in anti-submarine warfare and had top-secret facility clearance with the US Department of Defense between 1999 and 2008, wrote his [own report](#) this year about the scientific impossibility of the JIG's conclusions. He submitted a section of his report to the Seoul National University Alumni Association for publication but he says it was denied in less than three hours because its contents were too "sensitive."

Dr. Ahn and Dr. Kim are among a large minority who question the JIG report, [other scientists](#) among them. In the summer after the midterm report was released [a poll](#) conducted by the South Korean government showed 30 per cent of South Koreans doubted North Korea was involved. More striking, a Russian investigation after the interim report suggested it was unlikely North Korea was responsible.

All of this stands in stark contrast to the claim by US Secretary of Defense Hillary Clinton

that the evidence of North Korea's guilt is "[overwhelming](#)."

Dr. Ahn - almost no chance Cheonan was hit by a torpedo

The [JIG submitted "smoking-gun"](#) evidence on May 15th 2010 in the form of torpedo parts discovered just five days before the interim report was scheduled for release - though North Korea's guilt was [rumored](#) long beforehand. The captain of the boat sailing one of the two ships that were present when the torpedo parts were dragged out of the ocean called the find "[luck from heaven](#)."

Yet the source of doubt for the skeptics is not simply the fortuitousness of the find. They say there are many irregularities in the report itself and the scientific basis of its conclusions. Doubters also question the impartiality and expertise of the JIG, which was composed only of allies to the United States and South Korea - the United Kingdom, Australia and Sweden (though purported to be neutral, Sweden has [served](#) as the US diplomatic arm in North Korea, is a member of the NATO military alliance, involved itself in the Afghan War and has [sent prisoners to Egypt](#) on behalf of the CIA for torture).

Most strikingly, Dr. Ahn says the very theory that a North Korean submarine hid underwater undetected by radar and fired a torpedo at the Cheonan is scientifically impossible.

The JIG report says the torpedo was "conclusive" evidence of North Korean guilt because it was the same design as the blueprints of torpedoes North Korea sent to other countries for the purpose of arms exporting.

It says the submarine undetectably moved within range of the Cheonan and fired the torpedo, which identified and tracked the vessel until it moved directly under the ship's keel. The JIG says the torpedo exploded prior to contact, apparently by design, and created a powerful burst of water that cut the vessel in half.

Yet Dr. Ahn says an engineer with minimal experience in signal processing could have spotted the "fatal flaw" of the "smoking-gun" torpedo described in the JIG report. This is because sound wave targeting cannot be done while a submarine is underwater and undetectable, so North Korea would have had to use an historic and unknown method. He says no ships have ever been sunk by an undetected submarine in naval warfare.

"The blueprint does not show any digital signal processing, nor does it address the algorithms which enabled the torpedo to detect, track, navigate toward the Cheonan and blow itself up to make a non-contact explosion," he says.

Ahn says the chances of the torpedo accurately targeting the Cheonan using sound waves emitted from the ship in the harsh environment described in the JIG report would have been almost impossibly low - less than [0.00001](#) per cent. There was too much noise coming from cargo ships, fishing boats and high current speeds.

"It is hard to believe," he says. "It is harder to believe the JIG 'experts' do not discuss the North Korean historic [anti-submarine warfare] achievement in the report."

Tim Beal, a retired professor of New Zealand's Wellington University and author of two books on the Korean Peninsula, also questions why an anti-submarine corvette would not

have been able to detect the North Korean submarine if it did surface to launch the torpedo, particularly when other South Korean and U.S. Navy ships [were doing training exercises](#) in the area at the time.

“The Cheonan was no...easy prey for a modern submarine,” Beal wrote in his 2011 book *Crisis in Korea*. “On the contrary, the Cheonan was a modern ship with other top-class ships, American and South Korean, in the vicinity.”

No chemical evidence linking the torpedo and ship with an explosion

Dr. Yang Pan-seok of the University of Manitoba’s department of geological sciences also wants the Cheonan investigation reopened. He says the report fails to substantiate the claim that the Cheonan was sunk by an explosion at all.

The JIG says a white compound they discovered on the Cheonan and the torpedo were both aluminum oxide – a common byproduct of high pressure explosions underwater. Dr. Yang says if there really were aluminum oxide on both the torpedo and the ship it would be clear the torpedo sunk the Cheonan.

Dr. Yang says the JIG report data proves the atomic composition and chemical compounds of the two materials are identical but the materials’ ratio of oxygen to aluminum in their data (around 0.92) is different from the make-up of aluminum oxide (0.11-0.25). To be certain he obtained a sample of the white compound on both the torpedo and the ship and tested them himself.

“Everybody agrees this material we are looking at is not aluminum oxide,” Dr. Yang said. “What’s important is the origin, not the same chemistry on the torpedo and ship.”

Dr. Yang says the compound can be formed in many different ways. The JIG report says the aluminum oxide changed its chemical makeup after being submerged in the ocean for a period of time. Dr. Yang argues that is but one of a wide variety of possibilities that might explain the chemical similarity, including aluminum corrosion, a reaction to spilt diesel fuel or interaction with clay sediment – a well-known source of aluminum – common in the area.

“We will never be able to tell which path the compound took,” he said.

Dr. Yang thinks the difference in the chemical compound is why the JIG conducted their own simulation experiment to try and produce similar results.

“Instead of trying to find out what the identity of this white material was, JIG simply tried to compare the chemistry of this residue with their explosion test,” he said. “And they say the chemistry they collected matches with their experiment result.”

Yet even the results of the experiment [diverged from the samples](#) on the torpedo and the ship. The JIG explained this was because the real explosion created more extreme temperatures and the metal on the ship and torpedo also cooled down much more quickly due to water exposure, but Dr. Yang says this doesn’t make sense.

He says this because if there were aluminum oxide originally it would have formed a nano-sized diamond – another piece of substantiating evidence the JIG failed to find.

“The absence of this nano-diamond and aluminum oxide matches to what I’m thinking –

there was no explosion whatsoever,” he said.

Yang also wonders why the final report released in September relegated discussion of the chemical compound to the appendix when it featured so prominently as proof of an explosion in the interim report that concluded North Korea attacked the ship.

Russian report says torpedo attack by NK unlikely

Though the official investigation included only allies of the U.S. and South Korea, a Russian group of investigators were allowed access to the findings of the JIG after they had finished their report.

Professor Beal says the Russian investigation – little-discussed in Western media – appears to have been conducted by torpedo experts who were doubtful of North Korea’s capability to create a bubble column explosion that could tear the Cheonan apart.

“The Russian investigation was the only outside investigation that had some access to the data, so it’s important that their conclusions be noted,” he said by telephone from the United Kingdom.

Their investigation concluded that it was unlikely a North Korean torpedo sunk the Cheonan. They [were reportedly suspicious of this account](#) already because North Korea could not even make their own torpedoes prior to 1995 and the kind of torpedo capable of making a bubble-jet explosion was in the possession of the only the U.S. and a few other countries. Further, the attack method itself had never been successfully conducted in real naval combat.

As for the “smoking gun” torpedo, the Russian investigation concluded that its level of corrosion suggested it had been in the water for six months or more – far more than the less than three months between the official date of the sinking and when the JIG said they had retrieved the torpedo.

The Russians ultimately speculated that the ship got caught in fish netting (found on one of its propellers) and, while trying to get free, may have dragged up a sea mine causing an explosion.

“This was conjecture, not proof,” Prof. Beal said. “That might have been attainable if the Russians had been brought into the original investigation but no longer. However, what actually caused the sinking is of less consequence than what did not and the Russians were adamant on that.”

The Russian investigators did not actually release their findings to the public. The report was leaked to South Korean newspaper The Hankyoreh and published on May 28 and May 29.

Professor Beal says the Russians likely didn’t release the report because what they discovered would embarrass the South Korean government – something the Russians may have been particularly sensitive about, given their substantial debt owed to South Korea since before the fall of the Soviet Union.

Former Ambassador to South Korea Donald Gregg also [wrote](#) in the International Herald Tribune on August 31, 2010, “When I asked a well-placed Russian friend why the report has not been made public, he replied, ‘Because it would do much political damage to [South

Korean] President Lee Myung-bak and would embarrass President Obama.”

Suppression of doubt in South Korea

The South Korean government has worked hard to quash any Cheonan-related dissent within the country.

Even while the investigation was ongoing a civilian member of the JIG, [Shin Sang-cheol](#) was cast out for publicly disputing the existence of an explosion. He was eventually probed by the government under the auspices of South Korea’s [controversial National Security Act](#) for sympathizing with North Korea.

Civilian groups have also faced heavy criticism for questioning the investigation. A group with UN consulting status called the People’s Solidarity for Participatory Democracy [was investigated](#) by authorities for defaming the JIG and “benefiting the enemy.” Their crime was expressing concerns about the JIG interim report by sending a letter to the 15 member-states of the UN Security Council on June 11, 2010.

“Obviously there is something there the [South Korean government] wants to keep hidden,” Prof. Beal said.

“Most of the Korean academics who have criticized or analyzed the evidence have done so from the United States or Canada, not within Korea itself and the reasons for that are fairly obvious,” he said. “You’d have to be a very brave person to do it.”

Dr. Ahn and Dr. Yang have also faced strong condemnation for voicing their own opinions about the JIG report.

“If I say that underwater sound signal processing is virtually impossible from an engineering and mathematical perspective, I am not believed and I am declared to be a commie without any scientific learning,” said Dr. Ahn.

Dr. Yang says criticizing the government in South Korea doesn’t help anybody’s career so it isn’t surprising most South Korean scientists haven’t entered the debate.

“If you don’t accept the results of the government’s report, they will put red paint on your face,” he said.

Another retired scientist whose expertise is sound waves and seismic wave detection [told The Hankyoreh](#) that the explanation by the Korean Ministry of Defense that the torpedo detected the Cheonan using underwater sound waves “ignores science,” is “fact-free” and “simply put is just incompetent.” He asked to remain anonymous.

What really happened is still unknown

Dr. Ahn requested all the data related to the JIG investigation from the US Navy through the Freedom of Information Act in June last year. So far he has only received a copy of a separate report by Admiral Eccles, a member of the US Navy and participant in the JIG investigation.

Dr. Ahn says the Office of the Chief of Naval Operations informed him the information he requested would be in Admiral Eccles’ emails, and told him he would receive them by June

11, but he still hasn't. The Office of Naval Intelligence said they couldn't confirm or deny the existence of the data he requested.

Both Dr. Ahn and Dr. Yang do not purport to have any grand theory for what did happen to the Cheonan, but they are both sure of one thing respectively: the investigation needs to be reopened.

Professor Beal agrees North Korea was not involved, at least in the way explained by the JIG report.

"To this day we do not know why the Cheonan sank, but we can be pretty sure that the claim by the South Korean government that it was sunk by a North Korean torpedo is fabricated," he said.

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