Watching Through the Lens of a Long Telescope
Monitoring North Korean sanctions evasion in the maritime domain

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Abstract
The UN Security Council has imposed substantive sanctions on North Korea since 2006. The sanctions regime is monitored by a panel of experts based at the United Nations headquarters in New York. Because the country does not recognize the sanctions regime, the panel is compelled to fulfill its mandate by looking into North Korea from a distance. A former South African Navy captain, I was tasked with the portfolio of maritime transportation and the North Korean Naval forces. He served on the panel for five years until 2018. The paper unpacks the many ways that the panel, specifically the author, looked into North Korea to either investigate or monitor cases of evasion or violations of the sanctions involving bad actors in the maritime domain. The paper starts with the interdiction of the *Chong Chon Gang* and uses case studies selected from panel reports to demonstrate how, through a combination of technology, data, and information from states, it is able to look into the country, monitor it, and investigate evasion and violations of sanctions affecting the maritime domain. Aspects such as vessel disguises, deception, command and control, and the transfer of illicit goods and technology are covered in detail. The value of media and open-source information and other sources are also demonstrated. Many of the experiences detailed here have never before been shared in print. The challenge is to see it happening, look beyond the deception, and identify those behind it.

Introduction
The UN Security Council imposed substantive sanctions on North Korea in response to concerns over its nuclear weapons program and after its first nuclear test in 2006. The sanctions regime has since become the most comprehensive of any country in history.\(^1\) It is monitored by a panel of experts based at UN headquarters in New York, in support of the 1718 Committee established to oversee the sanctions since 2006. The panel tasked with monitoring North Korea may not set foot in the secretive state.\(^2\) North Korea—the Democratic People’s Republic of Korea (DPRK)—does not recognize the existence of the committee, the panel, or the sanctions regime, and so defiantly

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\(^1\) Since 2006, nine substantive resolutions which include twenty-six types of measures.

\(^2\) The Panel of Experts assists the 1718 Security Council Committee established pursuant to resolution 1718 (2006).
rejects its resolutions and reports. The United Nations celebrated its seventy-fifth anniversary in 2020 and North Korea has been at the forefront of the international body’s efforts to mitigate threats to global peace and security, starting with the Korean War and continuing with the country’s subsequent nuclear weapons ambitions, culminating in the sanctions imposed from 2016 onward. In his commemorative speech on September 21, 2020, Secretary-General António Guterres urged the leaders of what is becoming an increasingly polarized world to work together, and bemoaned that “today, we have a surplus of multilateral challenges and a deficit of multilateral solutions” and “so many years without a military confrontation between the major powers.” However, the ongoing, unresolved North Korean threat continues to be an unhealed wound in relations between the permanent members. China and Russia even proposed a draft resolution to lift some sanctions on North Korea (Nichols 2019).

The Panel of Experts, comprising eight independent experts, is mandated, among other things, to “gather, examine and analyze information from States, relevant UN bodies and other interested parties regarding the implementation of the [sanctions] measures, and gather, examine and analyze information in particular, on incidents of non-compliance.” This is done from the UN headquarters in New York, so the panel is therefore compelled to fulfill its mandate by looking into North Korea (and its neighbors), from the outside looking in, from afar.

With my appointment by then Secretary-General Ban Ki-Moon, the panel of seven became eight. I was the first to be tasked with the responsibility of specifically monitoring and investigating maritime transportation and the North Korean Navy. This expansion was in recognition that shipping is the lifeblood of North Korea, at least 80 percent of its trade flow going by sea and the fact that most evasion cases involved maritime transportation in one way or another. I served on the panel for the maximum allowed five years between 2013 and 2018, during which time I was never permitted to go to the secretive state or to its immediate neighbors to the North. In this role, I also supported the Iran and Yemen panel because they did not have a maritime expert and would therefore call on me from time to time. An incredible degree of sanctions evasion was ongoing—the adage “high risk–high gain”—given the great deal of money to be made in circumventing sanctions and North Korea seeing itself in survival mode. The discussion that follows unpacks the many ways that the panel, and specifically I, was able to look into North Korea (and neighboring states) in the course of either monitoring or investigating cases involving bad actors in the maritime domain.

The Chong Chon Gang Incident

After my having barely stepped off the flight from South Africa to New York on July 11, 2013, the North Korean vessel the Chong Chon Gang had been interdicted by Panama at the canal entrance outside Colon. On July 15, the Panamanian president publicly revealed (the first use of Twitter by a national president) that Panama had stopped a North Korean vessel carrying “undeclared military cargo.” This forced me to hit the ground running when the panel coordinator appointed me the lead investigator. Two days later, on July 17, the Panamanian Permanent Mission formally informed the 1718 Committee Chair that the North Korean–flagged vessel had been

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3 The Permanent Mission of the Democratic People’s Republic of Korea does however, on rare occasions, send a note verbale addressed to the president of the Security Council to make a statement.
inspected in Panama’s territorial waters and that materials possibly subject to the arms embargo in the resolutions 1718 (2006) and 1874 (2009) had been found aboard.\textsuperscript{4} When Panamanian authorities boarded the vessel, they were doing so with a search warrant to look for drugs. The panel arrived on August 12 to conduct an onsite inspection.\textsuperscript{5}

Their search revealed more than 240 tons of military equipment buried under thousands of bags of Cuban sugar, uncovering a North Korean–Cuban weapons transfer and the biggest weapons interdiction under the sanctions regime.\textsuperscript{6} Because the panel could only investigate an interdiction onsite at the behest of the host Member State, we had to wait for a formal invitation. Fortunately, Panama provided reports on what they had found, and another UN agency, the UN Office on Drugs and Crime, which was on the scene when the containers were opened, provided us with additional insight and information because seizures of illicit goods were part of their mandate. The panel was thus able to do extensive research on the containers, military items, and the vessel’s background and movements from its office in New York.

The North Korean vessel sailed with its automatic identification system (AIS) transponders off to evade international surveillance, sailing through the Panama Canal before picking up its illicit cargo in Cuba. The ship communicated via secret codes with Pyongyang and the North Korean Embassy in Havana, arranging the transfer with the Cuban military. Payments for the vessel’s transit through the canal and voyage costs were made through a network of shadowy front companies with offices stretching from Vladivostok to Singapore.

Because the panel has no access to company or government records in North Korea, as would be typical in most countries, the information from member states or onsite at incidents (but for a very limited window) is like gold. It is often important to take a second look at the information retrieved from a case because only then is fully understanding the meaning and context of the key elements of the case possible. A second look enables seeing new connections and, as a result, knowing what new documents and records are needed to complete the picture and take the investigation forward. Usually only one opportunity to get all the documents and information onsite is possible, but in the case of the Chong Chon Gang, we were able to go back to Panama a second time because the case against the captain and first mate was ongoing. We were able to get more communication records, copies of documents from the prosecutor’s files, and a very rare interview with the captain.

Of vital importance also, because the representatives of the company had to pay the fine for the release of the vessel in person—these key individuals had to fly out from North Korea and present identity documents, a formal company letter—in person. This provided critical information on the identity and contact information of key players in the hierarchy and critical information on the company that we could never have obtained without going to North Korea or having it provided by the country (which would never happen). The same bounty awaited us when it came to the seizure of the North Korean–flagged vessel Mu Du Bong by Mexico the following year. Although we were unable to access the address book of the first vessel’s email system, the Mu du Bong yielded all of its contacts. The information from these two incidents enabled the panel to build a

\textsuperscript{4} Resolutions 1718 (2006) and 1874 (2009).
\textsuperscript{5} The panel may only conduct a site visit if invited by the relevant Member State.
\textsuperscript{6} Twenty-five standard shipping containers (sixteen forty-foot and nine twenty-foot) and six military trailers (for Volga and Pechora systems), for a total of about 240 tons of arms and related materiel.
picture of the structure and operation of the operating entity Ocean Maritime Management Company. I say entity because North Korea has no private companies, shipping or any other type. All commercial vessels and their related “companies” in North Korea fall under the Maritime Administration, which reports to the Ministry of Land and Maritime Transport. We also learned that every North Korean crew had a political officer onboard, whose authority was superseded only by the captain. Last, that every captain keeps meticulous records of every voyage, including all receipts, which helps identify agents and complicit actors.

Both the Chong Chon Gang and its company, Ocean Maritime Management, were designated by the United Nations, so all vessels, companies, and personnel linked to it are subject to an asset freeze and travel ban. The activities of these are all then investigated and monitored by the panel. An implementation assistance notice was also created to share lessons learned from the incident with member states and to clarify the meaning of arms transfer. Because the main text of the panel’s reports is word-length restricted—because of translation capacity—a great deal of granular detail is shifted into the annexes, which are not translated.

The Chong Chon Gang’s Illicit Cargo

Examination of the Chong Chon Gang’s illicit cargo of arms and related materiel also provided a few insights into the relationship between Cuba and North Korea and the state of the conventional weaponry of Korean People’s Army. As a rule, the panel does not speculate in its reports. On the basis of my background and experience, however, I suspected that the cargo was but one of a series of clandestine shipments between Cuba and North Korea. Further, that it revealed a shortage of MIG-21 jet trainers (one was fitted for instrument flying training)—possibly through losses incurred, and engines—something they would have problems manufacturing indigenously, especially in light of an earlier illicit transfer of thirty-two decommissioned MIG-21 fighters and spares from Mongolia that was prevented (UNSC 2012, 40; 2015, 37–38). The presence of limited quantities or singleton varieties of tank tracks, the AO-18 cannon parts, the shells casings, the rocket-propelled grenades, 7.62 mm cartridges, further suggested these were possibly a precursor, serving as samples for a larger order if it met with the approval of their North Korean clients.

In my opinion, the unused equipment and equipment still in its original packaging suggests that these items all came from a very large war reserve of Soviet-era munitions, stockpiled during the Cold War, that was rapidly approaching its shelf life, being phased out of service, or surplus to the needs of a more peaceful era. It is entirely possible that this was an opportunity for Cuba to make good use of it as tradable goods or barter trade with an increasingly isolated North Korea and as a gesture of friendship between pariah states. Of some conjecture is the method of payment for the military equipment and sugar from Cuba, within the context of the delivery of hot rolled steel, springs, and locomotive wheels carried onboard the vessel that was offloaded in Havana on arrival. The panel calculated that the sugar, using its estimated international value, to be about $3.8 million, comparable to the combined value of the steel and wheels delivered by the Chong Chon Gang, $3.7 million.7

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7 The retail value of the hot rolled steel, if new, was about $3.66 million (5,341 tons as of July 2013 price at $673 per ton), and the locomotive wheels at around $36,000 (twelve units at $3,000 each), using www.steelonthenet.com and alibaba.com.
Command and Control from North Korea

The communications between the Chong Chon Gang’s captain and Pyongyang provided interesting insights into the network of command and control for North Korean-flagged fleet of vessels engaged in international trade—both legal and illicit. It became clear that the Maritime Bureau in Pyongyang was running operations through the pseudo-company Ocean Maritime Management (OMM). The communications, documents, and interview with the captain revealed several significant findings:

- Despite not being on its fleet list, OMM operated and supported the Chong Chon Gang on its voyage via its Pyongyang headquarters and regional branch offices in Vladivostok, Russia, and Dalian, China. OMM also made use of a complicit company in Singapore, Chinpo Shipping Company.
- All communications between the ship and OMM’s headquarters were copied to OMM’s Vladivostok office, “OCRU” (RU referring to Russia). Both passages through the Panama Canal were arranged with the Panama agent by OCRU.
- OMM Dalian branch arranged for spare parts while the ship sailed to Cuba.
- Chinpo Shipping Company, Singapore, paid the Panama agent for the canal transit and other services.

Automatic Identification Systems

The panel monitors movements of vessels linked to North Korea using specialized maritime tracking software such as MarineTraffic.com and Windward. These databases combine the AIS data from land stations and satellites to provide real-time information on ship’s location, tracks, and information transmitted by each vessel. Although it is promulgated as mandatory by the International Maritime Organization (IMO), for all vessels over three hundred gross tons to avoid collisions at sea, it is often manipulated by bad actors. The act of manipulation and false data also provides evidence of evasion through deception techniques. Legitimate instances of its being switched off aside, such as countermeasures against piracy and to avoid scrutiny by competitors such as choice fishing grounds or preferred areas for legal ship-to-ship transfers, not maintaining AIS in operation at all times is a violation of IMO requirements. Many operators have begun making its operation continuous (uninterrupted) through contractual obligations following panel recommendations to curtail the practice. It could be argued that the problems posed by AIS deception really gained international significance and attention with the Chong Chon Gang case. The vessel’s AIS was turned off on June 1 immediately after the ship passed through the Panama Canal, allowing it to quietly load the illicit cargo of weapons at a submarine base in Mariel (near Havana) before proceeding to another port to cover it with sugar. The AIS was only switched back on again on July 11, when the ship was approaching the Panama Canal on its western passage to North Korea, which cast a veil over all its movements in Cuban waters. Mariel was purposefully omitted from the vessel’s declared list of last ten ports of call to complete the deception.

Maritime Databases

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8 The IMO is a UN agency.
9 AIS is used to prevent collisions at sea, for vessel traffic management to ensure safe passage and for search and rescue purposes. SOLAS (Survival of Life at Sea), Chapter V, Regulation 19.2 on Carriage requirements for shipborne navigational systems and equipment.
Finding vessels requires a combination of specialized maritime databases such as the IMO’s GSIS, I Seaweb, and Equasis. This is done by analyzing company information (even if they are fronts), company records, registrations with flag states, and the commonality of contact information or office bearers. Open-source databases such as the Tokyo MOU, containing Port State Control data, and even the North Korean Maritime Administration database, is also helpful. These are combined with communications, and emails between entities, and the connectivity between key individuals, given that North Korea invariably relies on a few key individuals—who are based both in North Korea and embedded in companies abroad.

**Surveillance Patrols**

The panel also receives a great deal of information from coalition partner surveillance assets (naval vessels and aircraft) that monitor North Korean maritime activities. The contributing countries are Australia, Canada, France, Japan, New Zealand, the United Kingdom, and the United States. The activities include monitoring and surveillance of suspected UN sanctions violations, such as designated vessel movements, illegal ship-to-ship transfers of oil, petroleum products, and coal, illicit sand exports, and illegal transfer of fishing rights to foreign fishing vessels. The Japan Ministry of Foreign Affairs often posts press releases and photographs from patrol assets on its website to publicize these activities. 10 I cover these sanctions violations in greater detail to demonstrate how information is gathered to support panel investigations.

**Monitoring Banned Commodities: Breaching the Fuel Cap**

Ever since the imposition of an annual cap of five hundred thousand barrels allowed for petroleum product (fuel) transfers to North Korea in 2017, the country has continued to violate the resolutions by conducting illicit ship-to-ship transfers to import refined petroleum.11 More recently, the panel reported that this tactic has been supplemented by brazen direct, undeclared deliveries to the port of Nampo in violation of export reporting requirements for deliveries made to North Korea.

The panel is tasked with monitoring and reporting to the committee, which in turn alerts 78 member states on how close the reported (legal) transfers are approaching the cap, with a view that deliveries should then be scaled back.12 Tellingly, the market indicators for gasoline and diesel reflect steady price levels within North Korea—indicative of an absence of price spikes, which would mean fuel shortages, despite the cap imposed on supply by the sanctions (UNSC 2019b, 8). From January to August 2020, only China and Russia have reported exports. Without doubt, however, given the low price of oil and glut of tankers storing fuel, illicit transfers would be very tempting in a highly constrained global market. The panel monitors the status of fuel deliveries by satellite images of the fuel terminal in Nampo, tanker tracking, and reports from member states.

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11 Resolution 2397 (2017), paragraph 5.

Figure 1 shows a comparison reflecting how direct foreign tanker deliveries to Nampo has escalated while North Korean tankers engage in ship-to-ship transfers.

**Figure 1. Direct foreign tanker deliveries to Nampo**

Investigation of evasion activities includes these aspects and images taken by surveillance assets monitoring maritime evasion activities by North Korean–linked vessels. Figure 2 shows the fuel terminal at Nampo dedicated to receiving oil and petroleum products from vessels doing illicit ship-to-ship transfers at sea and direct deliveries, and a hub for inland distribution. Underwater pipelines are also attached to offshore mooring buoys to offload fuel from these vessels to the terminal complex.

**Figure 2. Nampo fuel import terminal**

*Source: UNSC 2020a, 7–8.*

*Source: UNSC 2019b, 66.*
**Ship-to-Ship Transfers**

Ship-to-ship transfers are intended to circumvent sanctions compliance controls at ports and to conceal the destination or origin of the transferred cargo. North Korea has been illicitly exporting coal and obtaining petroleum products illegally this way for some time. Vessels conducting such transfers with North Korean vessels will typically switch off their AIS to evade detection and mask their movements, which is contrary to IMO regulations governing safety of life at sea (SOLAS), requiring that the AIS be in operation at all times. These vessels also disguise themselves through ship identity theft and false AIS transmissions, often transmitting previous flags for as long as six months or more.

**Vessel Disguises**

Other methods of evasion include the physical disguise of North Korean tankers, the use of small, unregistered vessels, illegal name-changing and other forms of identity fraud, night transfers, and the use of additional vessels for transshipment. In figure 3, the vessel *Shang Yuan Bao* is captured by low light imaging by surveillance aircraft.\(^{13}\)

![Figure 3. The Shang Yuan Bao doing an illicit night transfer](image)

*Source: UNSC 2019a, 15.*

A good example of comprehensive deception is the foreign-flagged tanker the *Yuk Tung* (IMO no. 9030591) using AIS spoofing in the Yellow Sea. It impersonated another vessel by falsely transmitting using the MMSI number of its sister-ship and taking on the identity of the *Maika*.

\(^{13}\) The *Shang Yuan Bao* has been involved in multiple ship-to-ship transfers and vessel identity fraud with a number of North Korea-flagged tankers.
ostensibly flagged in Panama.\textsuperscript{14} It even used the \textit{Miaka}'sIMO number, 9033969. All the while, the real Comoros-flagged \textit{Hika}, using its legally registered IMO number of 9033969, was seven thousand miles away in the Gulf of Guinea (see figure 4). The \textit{Yuk Tung} also took the \textit{Hika}'s name then altered it to \textit{Mahika}, which it broadcast on AIS transmissions.\textsuperscript{15} Last, to complete the impersonation, the \textit{Yuk Tung} painted the abbreviation YT within a circle on the funnel, and painted over its IMO number and name on the stern, changing it to \textit{Maika}. The vessel also generated a fake Equatorial Guinea registration certificate as the \textit{Maika}.

\textbf{Figure 4. The Yuk Tung disguising itself by spoofing}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4.png}
\caption{The Yuk Tung disguising itself by spoofing}
\end{figure}

Source: UNSC 2019a, 10.

In a relatively new tactic, tankers engaged in illicit transfers meet via decoy “fishing vessel” Class B AIS decoy for illicit transfers.\textsuperscript{16} The second feeder vessel, using a Class B AIS transponder to disguise itself as a fishing vessel, conceal its identity, and limit the range of detection by patrolling assets. This vessel then acts as a homing beacon for potential transfer vessels for the North Korean tanker \textit{Saebyol}, sailing with its AIS off (see figure 4). The Class B transponders are carried by vessels below the threshold for compulsory AIS (Class A) as required by SOLAS, such as small fishing vessels. Although Class B units have less functionality, reduced power, and range, they can operate and communicate with Class A units on vessels above three hundred gross tons.

\begin{itemize}
\item[\textsuperscript{14}] Flag registries issue Maritime Mobile Service Identities (MMSI) numbers, which are recycled. IMO numbers are unique and never reissued. Spoofing occurs when one or more vessels are shown in two locations simultaneously.
\item[\textsuperscript{15}] UNSC Panel report S/2019/171 of March 5, 2019, 8–13.
\item[\textsuperscript{16}] UNSC Panel report S/2019/691 of August 30, 2019.
\end{itemize}
Monitoring Banned Commodities: Coal Shipments

North Korea was a global leader in anthracite coal exports before sanctions, mostly to China. In addition, exports of this commodity have been one of the key pillars of North Korea’s economy. Recognizing the contribution of this source of foreign revenue to its nuclear programs, the UN imposed a cap on coal exports in 2016 and then, following ballistic missile launches in 2017, a full ban of all coal exports on August 5, 2017. However, the high quality of its anthracite at bargain-basement prices has proved irresistible to many importers. Ways of monitoring illicit exports from North Korea include watching not only vessels leaving its ports but also the stockpiles of coal at the coal loading terminals, particularly the port of Nampo, the largest west coast port. The problem with exports from Nampo is that vessels have to pass through the West Sea Lock Gates across the entrance to the Taedong River, which limits vessels to fifty thousand tons and a harbor draught of ten meters.

The shipment of illicit coal from North Korean ports should not be confused with legal shipments of Russian coal from the Rason Free Trade Zone, Port of Rajin coal terminal, linked to the Trans-Siberian Railway. Here China and Russia provide information to the 1718 Committee, in advance, on the vessels and their exempted cargo. The two armored Mercedes-Benz S-Class sedans recently used by Kim Jong Un in North Korea on parade and abroad during talks with the United States revealed a nexus between coal smuggling from North Korea and luxury goods being smuggled into the country. The vehicles were shipped by an Italian company from Rotterdam initially to a company in Dalian, China, but after two changes, first ended up in Osaka, Japan—then onward to Busan, South Korea (Republic of Korea). There they were loaded onto the Togo-flagged vessel DN5505, which sailed with its destination listed as Nakhodka, Russia. It soon switched off its AIS. Research by C4ADS, using databases such as Palantir and Windward,

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19 The Rajin-Khasan port and rail project is allowed to solely export Russia-origin coal by paragraph 8 of resolution 2371 (2017) of 5 August 2017, and resolution 2375 (2017) of 11 September 2017.
suggests that the vessel transferred the vehicles at sea with another vessel in exchange for North Korean coal linked to a company Enermax Korea (Kuo and Arterburn 2019, 41–42, 49). Enermax had earlier been linked to a planned ship-to-ship transfer of North Korean coal between a Russian vessel and the vessel Wise Honest, seized by Indonesia then later by the United States, after being captured by satellite loading in Nampo in 2018.20

38 North harnesses observers and analysts to publish its in-depth analyses and wealth of information on developments happening in North Korea. Similarly, the RUSI Project Sandstone also produces high-quality reports based on high-resolution imagery and vessel tracking.21 In this way, they function as one of the many useful tripwires the panel could use to launch an investigation or add to the data on existing cases, especially high-resolution commercial satellite imagery. The relatively new (since at least June 2019) method of making ever-increasing illicit coal deliveries from North Korea to China using large nondescript barges has now also been adopted to illegally deliver sand.

### Monitoring Banned Commodities: Sand Exports

Member states play a big role in reporting prohibited exports from North Korea. Although North Korea had exported sand to states in the region in the past, it has recently exponentially ramped up dredging and exporting the sand in violation of the ban imposed by the resolutions since 2017.22 This activity should be seen within the context of North Korea clearly stepping into the gap in the sand export market left by exports restrictions imposed by Malaysia and Vietnam (Workman 2020). North Korea can generate millions in foreign revenue by exporting to its closest neighbor, China (less than a day’s sail away) which, together with India, exports two-thirds of the world’s cement, and an historic scale of construction that has generated a voracious appetite for sand, a critical ingredient of cement (Van Oss 2019, 42). Satellite imagery has once again played a definitive role in exposing the scope and scale of the illicit sand exports from North Korea.

Data analytics companies such as the Center for Advanced Defense Studies (C4ADS) also help the panel’s investigations by providing high-quality supporting data. Their excellent report on the tracking of the dredging and convoys of barges transporting sand, through a combination of open-source commercial satellite imagery, and specialized maritime databases, is but one such example. To quote their report, the astonishing scale and coordination of sand dredging operations off the west coast “showcases the boldness and impunity with which sanctions evasion networks operate, even under close scrutiny.” Ships transiting in the Haeju Bay area numbered at least 1,563 between March and August 2019 alone, relative to a modest 418 over the two previous years combined (Kuo and Sung 2019).

Member states reported to the panel that, in May 2019, more than ninety-two Chinese-flagged, large self-propelled barges were loaded with sand from dredgers in the Haeju port and Sinchang areas. These barges carried at least one million tons of sand with a value estimated of at least $22

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million. Tellingly, according to C4ADS, none of the 279 vessels tracked transmitted their IMO number, making it very difficult to definitively identify them. The risks are high, however, because the barges were never designed for an ocean voyage, demonstrated by the sinking of one barge in bad weather en route to China with its ill-gotten cargo of sand. Similarly, three other barges doing illegal sand dredging near Taiwan have also sunk with significant loss of life (Shim 2020). The Alibaba website details a plethora of Chinese sand suppliers, which raises the question of where the “good quality” sand is coming from, given that China only produces the “poor quality” variety, hence the attraction of North Korean sand. In figure 6, barges are visible taking on sand from dredgers in North Korean waters.

Figure 6. Snapshot of Chinese barges loading North Korean dredged sand on May 12, 2019

![Image of barges loading sand](image_url)

Source: UNSC 2020a, 41.

The sand is also being delivered to Chinese ports by large vessels and also transshipped in Chinese coastal waters to larger vessels destined for foreign ports. The panel named a Palau-flagged bulk carrier, the 16,725 gross ton *Rui Jin*, which has a Lebanese owner, that made multiple deliveries of North Korean sand to Ningbo, China. To hide its movements, the vessel switched off its AIS and LRIT (long-range tracking and identification system operated by the flag registry) on each voyage. To its credit, the Palau registry ordered the vessel to be detained in Ningbo and it has not moved since. In another classic deception tactic, the operators tried to change its name to *Mir*, to assign it a new registered owner, and to change its flag to Sierra Leone. The panel also tracks this phenomenon, called flag-hopping, when vessels are identified as complicit in sanctions...
evasion activities. Aside from sanctions violations, in the long term, the industrial-scale sand dredging will without doubt cause extensive damage to the coastal environment as North Korea seeks to cash in on the shortage of international supply and resultant spike in sand prices.

**State Media and Open-Source Media**

The panel uses North Korean state media extensively, both print and video releases, to identify sanctions violations and to gather information to support investigations, monitoring, and analysis. Articles and photographs from Rodong Sinmun and the public broadcaster Korean Central News Agency (KCNA) are powerful primary sources of information. In this context, *NK News*, a subscription-based website that provides news and analysis about North Korea, in particular, it provides a user-friendly interface and an archive to these media sources through its KCNA Watch professional services platform.\(^{25}\) The Internet Archive’s Wayback Machine is also a useful open-source resource for North Korean media.\(^{26}\)

During my time on the panel, I used a combination of state media to monitor and analyze the development of North Korea’s sea-launched ballistic missile (SLBM), the adaptation of commercial marine equipment for its Navy, and the acquisition of luxury yachts.

**Luxury Yachts**

A media article drew attention to luxury yachts acquired for North Korea’s leader, Kim Jong Un, in violation of the luxury goods ban.\(^{27}\) I based my investigation on a combination of state media imagery, commercial satellite imagery, and yachting magazines to track down the type of yacht, its manufacturer, and the route taken. The yacht in figure 7 was found to be a Princess 95MY manufactured by Princess Yachts International, Great Britain, valued between $4 to 6 million. The model pictured in 2013, produced between 2007 and 2011 was one of twenty-one sold worldwide.\(^{28}\) Notably, a Princess Yachts representative for North China, based in Dalian, notorious for its connection to North Korean illicit activity, denied any involvement (Ryall 2013). Satellite imagery showed that this yacht and another luxury yacht were based at the west coast port of Wonsan (Smith 2020). The yachts reveal the luxury lifestyle of Kim Jong Un while “diverting critically needed resources away from the people in the DPRK at tremendous cost when they have great unmet needs” to develop nuclear weapons.\(^{29}\)

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\(^{25}\) *NKNews* and KCNA Watch are accessible online ([https://www.nknews.org](https://www.nknews.org) and [https://kcnawatch.org](https://kcnawatch.org)).

\(^{26}\) Internet Archive is a free service available on registration ([http://web.archive.org](http://web.archive.org)).

\(^{27}\) *NK News*, “Exclusive: fit for a princess — Kim Jong Un’s $7m yacht,” June 18, 2013.

\(^{28}\) UNSC Panel report S/2015/131 of February 23, 2015, 42–43 (see also S/2014/147, para. 120).

Adaptation of Commercial Radars

Images of a new naval stealth surface effect ship, test-firing an antiship missile publicized by state media in 2015, revealed three commercial radar antennas manufactured by the Japanese company Furuno Electric Co. Ltd (see figure 8).\(^{30}\) Because this was a violation of the arms embargo through the acquisition and adaptation of commercial systems for the Korean People’s Army Navy vessels, it triggered a panel investigation. In this case, Furuno gave its full cooperation: no records of sale to North Korea after 2009 existed.\(^{31}\) The subsystems displayed aboard the missile boats are inexpensive, commercial, off-the-shelf products used globally in the fishing and leisure craft markets, making it impossible to trace the source without the serial numbers.\(^{32}\) The case demonstrated how easily North Korea can modify commercial maritime technology that can easily be integrated through plug-in interfaces for military use.

\(^{30}\) Rodong Sinmun, February 7, 2015.
\(^{32}\) These types of sensors are available for less than $1,600 per unit or under $9,000 for complete systems.
The Sea-Launched Ballistic Missile Program

The combination of state media releases and satellite imagery are crucial to monitoring the development of North Korea’s indigenous SLBM capability. On May 9, 2015, state media in Pyongyang announced that it had conducted “an underwater test-fire of [a] Korean-style powerful strategic submarine ballistic missile,” showing a missile emerging from the sea (KCNA 2015). Seven member states reported that the missile had been launched from an underwater platform rather than from the submarine as claimed. It became necessary to also monitor all the elements associated with the project: testing facilities (ground and a submersible test barge), a unique indigenous submarine design (Gorae class), infrastructure at the Sinpo South shipyard, a submersible drydock, and a towing vessel for the test barge.

The most important task was to determine the type and capability of the ballistic missile. Because North Korea is prone to exaggerating missile capabilities and manipulating imagery, the first objective was always to test the quality of the imagery for manipulation. This is essential to estimating dimensions, the type of propulsion, and the method of launch. The KCNA images of the missile showed that the SLBM (named Pukguksong-1) resembled the Soviet-era SS-N-6/R-27 SLBM, in terms of its length to diameter ratio, external features, and the warhead (see figure 9). The exhaust plume pointed to a liquid fuel propellant and, because ignition was above water, suggested an underwater cold ejection.

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33 Pukguksong translates to Polaris, or North Star, in English.
Satellite imagery of October 2013 showed a missile testing complex near the submarine construction hall in Sinpo. In figure 10, the imagery reveals a test stand and impact area adjacent to it, to conduct land-based launch ejection tests. Imagery from July 2014 revealed a hitherto unknown submarine in the fitting-out basin (with work going on within the submarine’s sail), a submersible test barge, and a towing vessel. Analysis of the vessel showed a single launch tube capability for an SLBM.

KCNA footage of a visit by Kim Jong Un to an engine test facility revealed the gas generator used to cold-launch the missile on March 24, 2016, from an underwater launch tube for the test (left) when fitted onto the base of a submarine-launched ballistic missile (see figure 11). This successful launch test, which transitioned through the ejection, boost, and flight phases, on a lofted trajectory, was a significant leap forward, placing North Korea into an exclusive group of nations with a submarine-launched ballistic missile capability. The two-stage missile has subsequently been
upgraded to solid-state propellant and the new, bigger version seen on parade in 2017. The Pukguksong-3 was first test-launched on October 2, 2019 (the Pukguksong-2 being a land-based version). The main fabrication hall at the Sinpo shipyard is being carefully watched for signs of a suspected newer submarine with capacity for multiple launch tubes, particularly given that the capability depends on a single launch platform and only one launch tube. Of significance is the state media coverage of the October 10, 2020 military parade, where a fourth iteration of the Pukguksong SLBM was revealed: this will spark a new round of research to determine what “upgrades” have been developed to enhance its capabilities (Van Diepen and Elleman 2020).

Figure 11. KCNA screen captures of the gas generator (left) fitted to the SLBM (right)


Seafood and Fishing Rights

Despite a ban on seafood exports, North Korea has continued to transfer its fishing rights in violation of sanctions. Seafood exports are an important source of revenue for North Korea, estimated to have generated about $295 million in 2017 (Nichols 2019). This aspect is challenging to monitor because these vessels are not easily tracked without AIS. It has been estimated that revenue dropped to $120 million in 2018 after the ban. It is now growing again, however. Reportedly, Chinese fishing vessels have been displaying North Korean fishing permit number plates, documents, or North Korean interim certificates of registry in mid-2019 (see figure 12).

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Figure 12. Chinese vessels illegally using North Korean fishing permits

Source: UNSC 2020a, 44.

The going rate of a fishing permit for three months is reportedly ¥400,000 or $57,594. Notably, the fishing vessels try to avoid the scrutiny of patrols by painting over their names and superimposing another. Although the ban intended to deny North Korea revenue for its nuclear and ballistic missile programs and make vital nutrition available to citizens, the sale of fishing rights created other problems for fishermen. This is manifested in a phenomenon known as “ghost ships,” where fishermen are pushed long distances from their ports and beyond their traditional areas to find new fishing grounds. Along the Japanese coast, North Korean fishing boats are washing up with the bodies of their crew. Although this has been happening for years, the increase since 2017 is dramatic. The displaced fishermen being pushed farther out have also resulted in conflict, even gunfire, in the Exclusive Economic Zone of Russia (BBC 2019). Incidentally, the lifting of the ban on seafood was one of the proposals made by China and Russia in December 2019 (Nichols 2019).

Casting the Net Wider: Panel Resources

The panel uses diverse sources that each contribute pieces of the puzzle, including interviewing individuals from companies dealing with North Korea, those involved in incidents, and defectors.

Defectors

Another effective way to look into North Korea and get a snapshot of activities within the secretive country’s programs is to interview defectors. I use the word snapshot deliberately because the freshness these individuals’ knowledge stops the moment they leave and the time lapse before the panel gains access to them is often significant. Although the panel cannot quote or mention these individuals to protect their identities, they are nevertheless invaluable in providing insights into the methodologies, activities, and hierarchies of those carrying out the illicit activity. Furthermore, an unspoken rule dictates that defector testimony per se does not meet evidentiary standards. It is
nevertheless very helpful by providing insight into and direction for investigations and broadens the scope of what is known but still needs to be verified.

**Across the Borders**

An important part of the maritime domain is the monitoring of the flow of trade that goes by sea from North Korea to nearby foreign ports for transshipment, such as those in the Chinese ports of Dalian and Dandong (which is relatively close by road and rail via the Yalu River) on the west coast, and Russian Far East ports on the East Coast and across the Tumen River by road and rail (particularly the Trans-Siberian rail link). I have had investigations from concerned banks regarding marine diesel ostensibly destined for Chinese companies, but the rail link crosses over the Tumen River via a North Korean station before crossing over again to China.

Economic data also provides a way to monitor maritime activity from North Korea because certain exports from the isolated country can be shipped only by sea. This provides the panel with a clue that can be used to trigger investigations into trade prohibited by the resolutions. This information is available from the UN Comtrade database, a free repository of official international trade statistics and relevant analytical tables.³⁵ Because North Korea does not provide trade data, the panel does reciprocal calculation of imports to trade recipients to extrapolate exports from the secretive country.

**Korea Watchers Community**

For the panel, and particularly in the maritime environment, Korea watchers are a highly effective force multiplier. These groups and individuals often have access to greater resources and many highly talented analysts at their disposal. The panel often meets with analysts, experts, and diplomats for briefings, discussions, and an exchange of ideas. The importance of such engagements is often in breakthroughs in cases or in pieces added to the puzzle that enable the panel to take cases further by providing additional avenues of enquiry or context or details that clarify the meaning or importance of information at hand. The inverse is also true, on many occasions I have seen Korea watchers take information from panel reports and open up new windows on incidents of evasion or deception.

**Conclusion**

This paper intended to share insights into the work of the UN Panel of Experts for North Korea, and how the experts do their research and investigations on what is a highly secretive, inaccessible country, faced with the most comprehensive sanctions regime in history. Being denied access and having to work from New York is both difficult and challenging. It can be done, however, using a combination of technology, data, and the support of cooperating states, providing evidence of evasion activities and violations of a multitude of sanctions measures impacting the maritime domain. Looking into the country invariably entails looking outside the country and working to trace the activity back to North Korea, often in multiple steps. The challenge is heightened when North Korean and other complicit actors employ counter strategies and tactics to obfuscate their

identity, tracks, and networks to mislead due diligence efforts and their connectivity to North Korea.

Only eight members serve on the panel, each with a distinctive portfolio. Mine was the maritime domain, which linked up with nearly every case and often constituted the bulk of the seven reports I contributed to. The evasion going on is considerable: the adage “high risk–high gain” applies, given the money to be made in sanctions and North Korea seeing itself in survival mode. If you are seeking granular detail on the cases, actors, typologies, and deception, I urge you to seek out the reports. They often read like a spy novel, full of intrigue, twists, and turns.
Note

All opinions expressed are solely my view and are independent from the current Panel of Experts. Images for this paper have been sourced from the UN Panel of Experts finals and midterm reports.

References


About the Author

NEIL WATTS, formerly a Captain with 33 years’ service in the South African Navy, specialized in surface warfare and weapons systems, serving nearly 20 years at sea. Neil has served as the Maritime Expert on the United Nations Security Council Panel of Experts (POE) for North Korea from 2013 to 2018. He investigated sanctions evasion, illicit shipments and networks, tracking suspect vessels worldwide and uniquely boarded several North Korean and North Korean-controlled vessels, starting with the Chong Chon Gang in 2013. Neil was also responsible for monitoring North Korea’s navy, which included the Sea Launched Ballistic Missile (SLBM) program. He co-authored seven reports for the UN Security Council and authored the Maritime Sanctions Handbook for the DPRK. Prior to joining the Panel, he served on the South African National Maritime Security Advisory Committee, the Priority Committee for Maritime Security, and as a member of the Southern Africa Development Community (SADC) Counter-piracy Assessment Group. Until 2013, he was responsible for developing and executing the national counter piracy strategy. Neil obtained an MA in International Security and Global Justice at Brooklyn College CUNY, is a graduate of Stellenbosch University, the South African Executive National Security Program (First place and best academic paper) and the Joint Senior Command and Staff Course. He is a Senior Contributor, Maritime Security for Compliance and Capacity Skills International (CCSI), and a Senior Research Associate for Kings College London, United Kingdom – Project Alpha.

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About the North Korea Economic Forum

North Korea Economic Forum (NKEF) is part of the policy program at the George Washington University’s Institute for Korean Studies (GWIKS). The Forum aims to promote the understanding of North Korean economic issues, distribute well-balanced, deeply researched, and multi-dimensional insights on the North Korean economy and to expand networks among various North Korea watchers, scholars, and policymakers. The Forum mostly involves closed and off-the-record meetings, where participants can freely and seriously discuss critical issues. Mr. Daniel Wertz is currently the chair of NKEF and is leading the meetings. NKEF also organizes special conferences made public throughout the academic year. The Forum is made possible by a generous grant provided by the KDI School of Public Policy and Management.