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In China's Shadow

Exposing North Korean Overseas Networks

AUGUST 2016

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About C4ADS

C4ADS (www.c4ads.org) is a 501(c)(3) nonprofit organization dedicated to data-driven analysis and evidence-based reporting of conflict and security issues worldwide. We seek to alleviate the analytical burden carried by public sector institutions by applying manpower, depth, and rigor to questions of conflict and security.

Our approach leverages nontraditional investigative techniques and emerging analytical technologies. We recognize the value of working on the ground, capturing local knowledge, and collecting original data to inform our analysis. At the same time, we employ cutting-edge technology to structure and analyze that data. The result is an innovative analytical approach to conflict prevention and mitigation.

About The Asan Institute for Policy Studies

The Asan Institute for Policy Studies was founded with a mission to become an independent think tank that provides effective policy solutions to issues which are critical to Korea, East Asia, and the rest of the world.

The Institute aims to foster wide-ranging and in-depth public discussions which are essential for a healthy society. By focusing on areas including foreign affairs, national security, public governance, energy, and the environment, it strives to address some of the major challenges that our society faces today.

The Institute addresses these challenges not only by supplying in-depth policy analysis, but also by endeavoring to promote a global and regional environment favorable to peace, stability, and prosperity on the Korean Peninsula.

In addition to policy analysis and research, the Institute undertakes the training of specialists in public diplomacy and related areas in an effort to contribute to Korea's ability to creatively shape its own future.

Acknowledgement

This report is the product of a six-month long collaboration between the Center for Advanced Defense Studies (C4ADS) and the Asan Institute for Policy Studies to identify financial vulnerabilities of the Democratic People's Republic of Korea (DPRK) by using cutting edge data mining methodology and network-centric analysis.

North Korea's nuclear and ballistic missiles are the greatest obstacle to the peace and stability of the Korean Peninsula and Northeast Asia. Understanding and analyzing the supply chains that enable these programs is a prerequisite to disrupting North Korea's illicit networks and formulating smart policies that reduce the threat level.

Leveraging C4ADS' analytical methodologies, this report reveals that the regime's illicit weapon programs depend on sophisticated overseas networks for the procurement and financing of key components of their weapons programs. It identifies points of vulnerability that are ripe for targeted disruption of the DPRK's secretive overseas networks.

This research was funded by a joint grant from two anonymous private foundations. C4ADS and the Asan Institute for Policy Studies would like to thank Bill Newcomb, a C4ADS fellow, and former member of the UN Panel of Experts Sanctions Committee 1718, David Asher of the Center for a New American Security, Leo Byrne of NK News, Joshua Stanton, an attorney in Washington D.C., and the many other individuals who generously provided advice and insight. This report would not have been possible without C4ADS technology partners, whose software and systems were integral to the project's success.

They include Palantir Technologies, Panjiva Inc., and Windward for access to their unique data and analytics.

Legal Disclaimer

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Executive Summary

North Korea's overseas trading networks are evolving, and Pyongyang's expansive business dealings with China, its biggest trading partner, are driving changes in the character, scope, and methods of these networks. As a result of these changes, North Korea and the entire Northeast Asian region face greater instability as regime elites in Pyongyang become increasingly willing and able to procure the strategic resources they need for regime security and weapons development.

North Korea has maintained a trade deficit since at least 1990, when researchers started to compile reliable data on the country's international trade volume. Because some form of "invisible" or alternative sources of income are required to offset this deficit, this report argues that a significant portion of alternative revenue derives from overseas procurement and trade networks that have grown rapidly in size, sophistication, and scope. Wage earnings by North Korean workers overseas, revenue from various joint ventures between DPRK and foreign entities, and trafficking in weapons, illicit goods, and wildlife constitute further sources of hard currency. These illicit engagements have spanned the globe to include a range of rogue actors and proliferators, including Syria, Hezbollah, Libya, Pakistan, and Iran.

To map these growing overseas networks, this report used open source databases, including corporate registries; court filings; Equasis maritime database records; customs and trade data provided by Panjiva, a customs trade data aggregator; and real time data on ship activities provided by Windward, a maritime data and analytics platform. The compiled information was consolidated using Palantir's Gotham network analysis platform. The resulting study consists of two parts.

In Part I, we focused on building bulk datasets on companies, individuals, and ships. By using corporate and tax registries in East Asian countries, we were able to identify significant points of convergence across seemingly disparate networks and identify 562 ships, companies, and individuals within one degree of separation from known DPRK illicit and regime entities.

In Part II, we identified key nodes from our expanded dataset for a more in-depth investigation. We focused, in particular, on one Chinese trading conglomerate that has conducted over $500 million of trade with the DPRK in the past five years. Within this network, we were able to identify its subsidiary and affiliated entities that have transacted an additional $300 million with sanctioned Burmese and North Korean entities, helped maintain the cyber infrastructure of the DPRK, and traded in various goods and services that raise serious non-proliferation concerns.

Overseas networks are vital conduits of hard currency for the North Korean regime that remain exposed and vulnerable. Overseas North Korean agents and entities depend on a range of third-party facilitators for core business operations. We assess that this dependence can be leveraged and disrupted if more detailed information on the size, personnel, and *modus operandi* of such networks, especially the methods employed to circumvent sanctions can be generated. This report aims to bridge this gap by using open source data to map and expose the DPRK's overseas networks.

Methodology

This report constitutes a four-month pilot project that aims to demonstrate the effectiveness of using open data to map and expose DPRK overseas networks.

In Part I, we constructed a baseline dataset from the most prominent aspects of North Korea's overseas network using an initial sample from the DPRK fleet of cargo ships consisting of 39 vessels identified by the UN Panel of Experts and Leo Byrnes of NK News. Each ship was individually investigated to discover its associated companies, including shipping and ISM managers,[i] and registered owners. Public records were then used to uncover the directors and shareholders of these companies, and we then expanded our network to include any additional companies run by these directors and any ships associated with those companies. Individuals and entities were linked through overlapping directorships, shareholdings, common places of business, and other unique identifiers. In this manner, the initial sample was expanded into an interconnected network of over 147 ships, 167 individuals, and 248 companies. Data from this expanded sample was structured within Palantir Gotham's network analysis platform. Significant convergence of previously identified and unidentified North Korean entities was identified within this expanded dataset.

In Part II, key entities for focused investigations were identified based on patterns and trends found within the Palantir structured data. To expand the emerging networks, public records in East Asian countries, including corporate registries, court fillings, and customs and trade data aggregated by Panjiva were primarily but not exclusively used. For key ships of interest, we utilized Windward's Maritime Analytics System, which analyzes and organizes hundreds of millions of data points per day to make sense of ship activities worldwide. A range of other sources, including Chinese, Korean, and Japanese native-language media, civil lawsuits, and academic reporting supplemented the research. Wherever possible, the research priority lay in the identification of unsanctioned companies associated with DPRK sanctioned entities, which could represent indicators of ongoing proliferation activities and hard currency generation for the DPRK.

Throughout this research, we have prioritized using official documentation whose source and credibility can be clearly established.

Because North Korea is one of the most isolated and secretive countries in the world, there are some limitations in the report's methodology. In many cases, there is no transaction level financial data to confirm suspected illicit activity. In addition, a large portion of DPRK trade is not prohibited. As such, unless explicitly stated, the mention of any individual, company, organization, or other entity in this report does not necessarily imply violation of any law or international agreement, and should not be construed as such.

Our objective was not to make any determinations on the existence or legality of business activities, but to provide representative case studies to demonstrate the manner in which entities and individuals in close proximity to DPRK overseas networks could operate and adapt to sanctions.

i. Companies involved in managing ship's crews and upholding international standards of ship safety and pollution standards.

Introduction

On March 2, 2016, two months after the DPRK's fourth underground nuclear test, the UN Security Council passed Resolution 2270.[1] On paper, it constitutes the international community's most ambitious effort to pressure the DPRK's foreign exchange earnings that are being diverted towards its military and nuclear programs. Among a range of other measures, Resolution 2270 expands the list of controlled items to include small arms, orders that nearly all DPRK planes and ships be inspected in foreign ports, mandates increased scrutiny of the DPRK banking sector, and bans the export of certain natural resources and aviation fuel.[2]

The success of the sanctions regime will hinge upon its implementation, and in particular, the ability to precisely target the key nodes facilitating DPRK illicit activities. There is evidence to suggest targeting priorities have been previously misaligned. A Stockholm International Peace Research Institute (SIPRI) study from 2014 found a significant gap between the entities being targeted and those actually facilitating DPRK overseas illicit activity. The study found that 91% of U.S. and 84% of UN designations targeted entities inside the DPRK,[3] but noted that 74% of the 161 entities it identified as being involved in sanctions evasion were registered in and by third country states and nationals.[4]

Separating this illicit and restricted activity from the broader flow of licit and regular trade is particularly difficult in the DPRK context. The regime's control over the economy has meant that revenue from even the most basic licit business dealings can be diverted to support illicit programs, including nuclear and ballistic missile development. In July 2009, the Undersecretary for Terrorism and Financial Intelligence at the U.S. Department of the Treasury, Stuart Levey, admitted as much, publicly stating that, "Because of the kind of deceptive conduct that North Korea engages in […] it is virtually impossible to distinguish between legitimate and illegitimate North Korean business."[5] In addition to this misalignment, enforcement of the DPRK sanctions regime is relatively limited as compared to Iran, when measured in terms of number of blocked individuals, entities, and vessels on the Specially Designated Nationals List (SDN) and other blacklists. As of March 2016, across all North Korean sanctions programs, there were only 97 entities on the U.S. SDN list[6] and only 32 on the UN list.[7] By comparison, even after the enactment of the Iranian nuclear deal and the removal of over 400 entities on implementation day,[8] there are still over 400 entities on the U.S. SDN.[9]

The tightened sanctions come at a time of relative success for North Korea's overseas trade. Statistics from the South Korean Trade Investment Promotion Agency show that, in 2014, the DPRK's total trade volume reached $7.6 billion, its highest level in decades.[10] Approximately 60% of this trade consisted of imports, resulting in a structural trade deficit of $1.3 billion.[11] Given that the DPRK has little access to international debt markets, its ability to finance such a trade deficit, and to do so consistently over several years, is a significant source of concern. It likely means that the regime has access to some source of "invisible income," most likely coming from the various overseas, illicit schemes the regime uses to acquire hard currency.[12]

North Korea's external economy has increasingly assumed the characteristics of a hybrid network of licit and illicit components. These networks have grown adept at hiding their illicit activities within licit systems of global trade, finance, and transportation. They use a variety of schemes to disguise beneficial ownership, including using flags of convenience for ships, establishing shell and front companies to register their holdings, fabricating manifest and financial documents, and using multiple layers of intermediaries to conduct business.[13] The net result, as UN Panel Expert Katsuhisa Furukawa has noted, is that various legitimate companies, including multi-national banks, shipping companies, and air carriers, are likely to be inadvertently facilitating North Korean illicit activity.[14]

The seizure of the North Korean cargo ship *Chong Chon Gang* in 2013, discovered with 25 containers filled with military equipment while transiting through the Panama Canal, is a case in point. The *Chong Chon Gang*'s shipment, which included two Cuban MiG-21 jets and a radar system, among other weapons, was hidden underneath an unassuming shipment of sugar. In addition to serving as camouflage for the weapons, these bags of sugar were payment for a prior shipment that North Korea had sent to Cuba, whereas the interdicted weapons were to be paid for with a subsequent shipment from North Korea.[15] The case of the *Chong Chon Gang* is a perfect illustration of how legal and illicit trades are intertwined in North Korea's offshore economy.

With the right resources and political will, it can be possible to significantly disrupt the DPRK's illicit overseas earnings, and in the process raise the cost of its brazen proliferation activity. As the DPRK grows increasingly dependent on its overseas networks, it creates an opportunity for the international community to leverage their financial intelligence tools to squeeze the regime's illicit activity. While actors inside North Korea can operate with impunity, abroad they are subject to international norms. A single shipment can require significant documentation and effort, including maintaining corporate entities, processing cross-border payments, or acquiring insurance or bank letters of credit, all of which necessarily leave paper trails that can be followed. By exposing these risk points and peeling away the infrastructure of DPRK illicit overseas networks, the cost and difficulty of operating abroad could rise dramatically.

Following the money is likely to be the most effective means for the international community to coerce the Kim regime toward concessions and a cessation of their nuclear program. Getting there, however, will require significantly expanded efforts to continually investigate, monitor, and act against DPRK entities as they further evolve to evade sanctions.

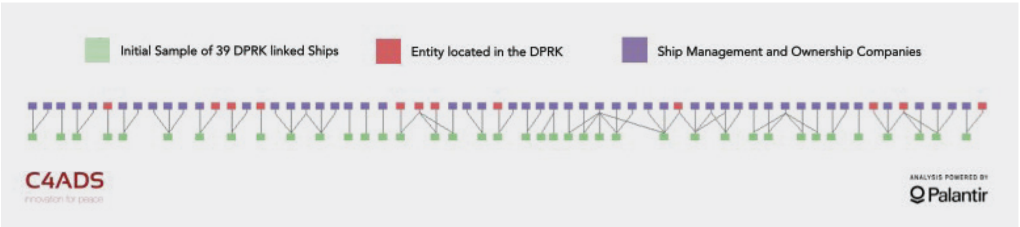
This report aims to build a foundation for this effort.

Part I: The Baseline Dataset

The research began by compiling data on entities operating in proximity to known DPRK entities. The initial focus was on the shipping networks that physically sustain much of the DPRK's global trade. We began with a core dataset of 39 DPRK-linked ships, including 15 North Korean, foreign flagged ships identified by the 2015 UN Panel of Experts, as well as another 24 identified by NK News, which maintains a database of ships that repeatedly travel in to and out of DPRK ports (Note: Five ships were identified by both NK News and the UN Panel of Experts). Since beginning our investigation, three of our initial sample ships have been designated for sanctions by the U.S. Department of the Treasury.[16]

For each of the 39 ships, we built out their management structures by identifying their registered owner, ISM manager, and ship manager using the Equasis maritime database. Only four of the 39 ships provided any information on their beneficial owners.

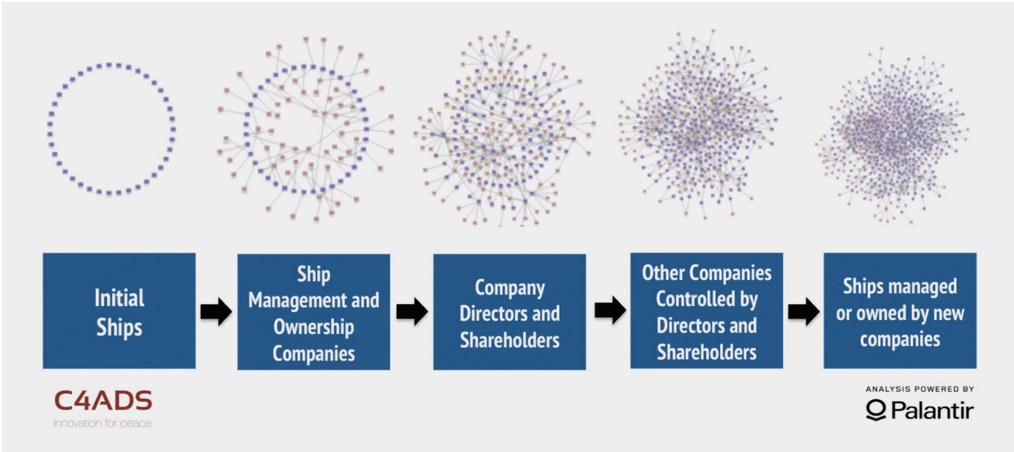
Figure 1: Initial Ship Ownership and Management Structure



Source: Palantir visualization of C4ADS data

Once we identified the owners and management companies of the ships in our initial dataset, we were able to obtain the corporate registry filings of the companies, which allowed us to identify each company's directors and shareholders. Using this information, we were able to uncover additional ships and companies owned and managed by entities within this network. The image below illustrates our investigative process.

Figure 2: Expanded Ship Ownership and Management Structure



Source: Palantir visualization of C4ADS data

Employing this methodology, our original sample of 39 ships expanded significantly to a final dataset of 562 entities, including 147 ships, 167 individuals, and 248 companies.

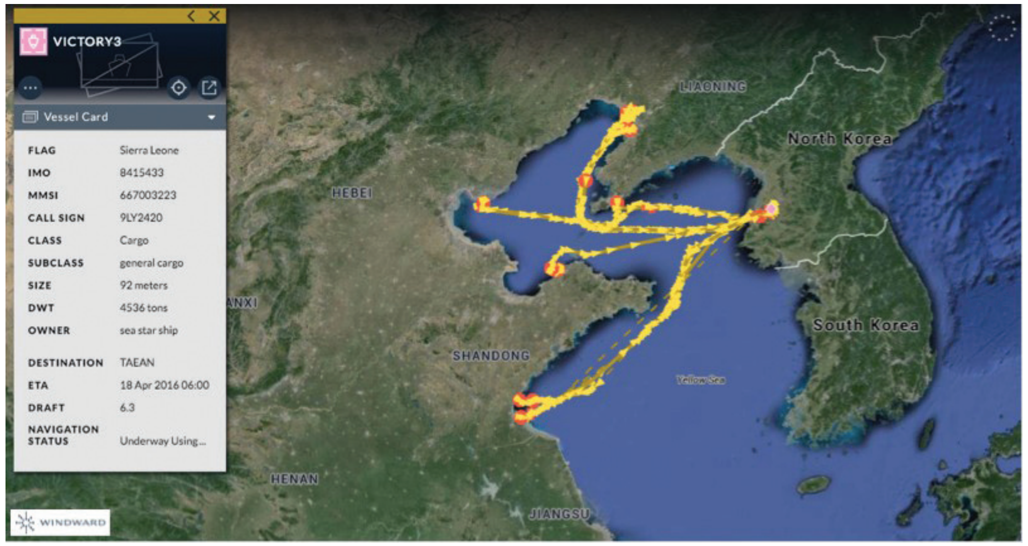
MV Light: A Sample Case Study

A key finding from the UN Panel of Experts was the observation that "While [DPRK] networks appear complex, their key nodes consist of a limited number of individuals and intermediaries…. Although shell companies can be swiftly changed, the individuals responsible for establishing and managing them have remained, often for years."[17]

One ship within our initial sample of 39 was the *Victory 3* (IMO: 8415433).

The ship was flagged by the DPRK from January 2004 to May 2006 and was formerly owned by Korea Buyon Shipping,[18] a North Korea-based company designated under Executive Order 13722 by the U.S. Department of the Treasury on March 16, 2016.[19] However, the *Victory 3* is best known for its activity under a previous name, the *MV Light*.[20]

Figure 3: *Victory 3*, Formerly Known as *MV Light*, Voyage Chart (Feb-April 2016)



Source: Windward Maritime Analytics System

In 2011, the U.S. Navy destroyer USS McCampbell intercepted a cargo ship, the *MV Light*, en route from North Korea to Myanmar allegedly carrying missile components.[21] Members of the U.S. Navy prepared to board the ship but, concerned the situation would deteriorate, decided against further escalatory action. After a brief standoff, the ship returned to North Korea.[22]

At the time of the interdiction, a Chinese company, Dalian Sea Glory Shipping, reportedly operated the ship.[23] The UN Panel of Experts' (UN POE) March 2016 report listed the company's directors as Chinese nationals

Lu Tiehe 吕铁和, Fan Mintian 范民田, and Dong Changqing 董长青.[24] According to the Hong Kong business registry, these men reportedly owned several additional companies in Hong Kong, including V-Star Ships Ltd., a company mentioned during the trial of Chinpo Shipping, a Singapore-based company.[25] Chinpo Shipping was prosecuted in 2015 for its role in facilitating weapons shipments aboard the *Chong Chon Gang* on behalf of a North Korean company, Ocean Maritime Management (OMM).[26] [27]

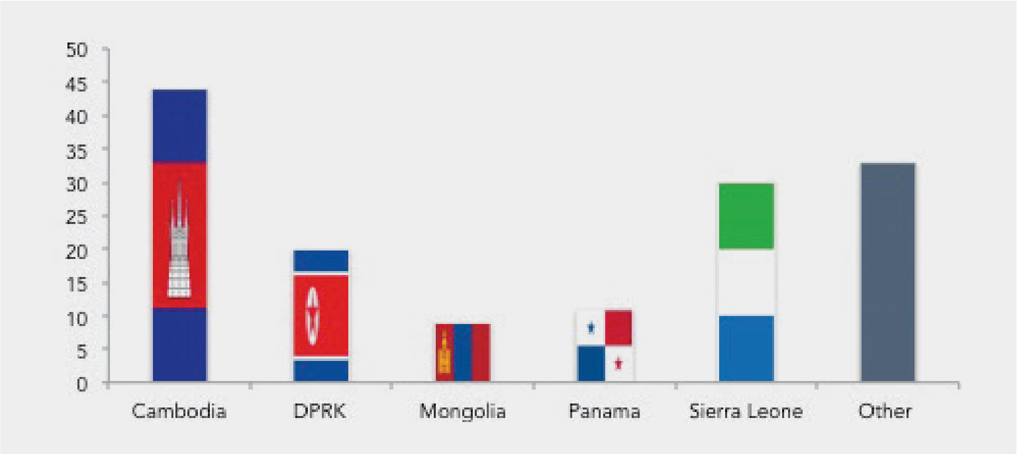
The ship, seized in Panama, was found to be carrying two MiG-21 aircraft; disassembled SA-2 missiles; aircraft engines; an assorted range of light weaponry, including RPGs, small arms ammunition, antitank gun and howitzer artillery shells; and generators, batteries, and night vision equipment.[28] [29] Court transcripts state that communications between Chinpo Shipping and OMM requested, "OMM not…send any instructions for outward and inward remittances to and from V-Star Ships Ltd and Cuba so as to avoid being blacklisted."[30]

Key individuals have remained consistent across these companies. Lu Tiehe, one of the owners of Dalian Sea Glory Shipping and V-Star Ships Ltd., now appears to be the sole shareholder and director of the Hong Kong-based company Sea Star Ship Co Ltd. (Fan Mintian and Dong Changqing were shareholders but reportedly transferred their shares in October 2014).[31] According to Equasis records, the company also manages the ship *Baoshan Rich* (IMO: 9128843), which can be seen in Windward data moving back and forth between Iraq and the UAE over the course of several months.[32]

Trend Analysis: Shipping Fleet

After expanding our dataset, we conducted a trend analysis on the 147 ships we had identified. Our findings closely correspond to a set of risk indicators, identified by SIPRI, to assess ships that are more likely to be involved in illicit activities. In their analysis of over 2,500 vessels involved in maritime

Figure 4: Ship Flagging Trends



Source: C4ADS

trafficking of illicit goods since the early 1980s, they concluded that "illicit ships" were more likely to be cargo ships, have an average age of over 27 years, be registered in a flag of convenience state, and have been involved in previous accidents or pollution incidents.[33]

The analysis of our dataset of ships found the following observations:

- 86% (127) of the 147 ships were registered in countries other than the DPRK.

- 79% (117) of the 147 ships in our sample are listed as general cargo ships.

- The average age of the ships is about 22 years, with the newest two registered in 2011 and the oldest registered in 1968.

- 64% of the ships are flagged in jurisdictions that are formally listed as flags of convenience states by the International Transport Workers Federation.[34] Of the remaining 36%, the jurisdictions include Palau, Philippines, Sierra Leone, Togo, Tuvalu, and Singapore.

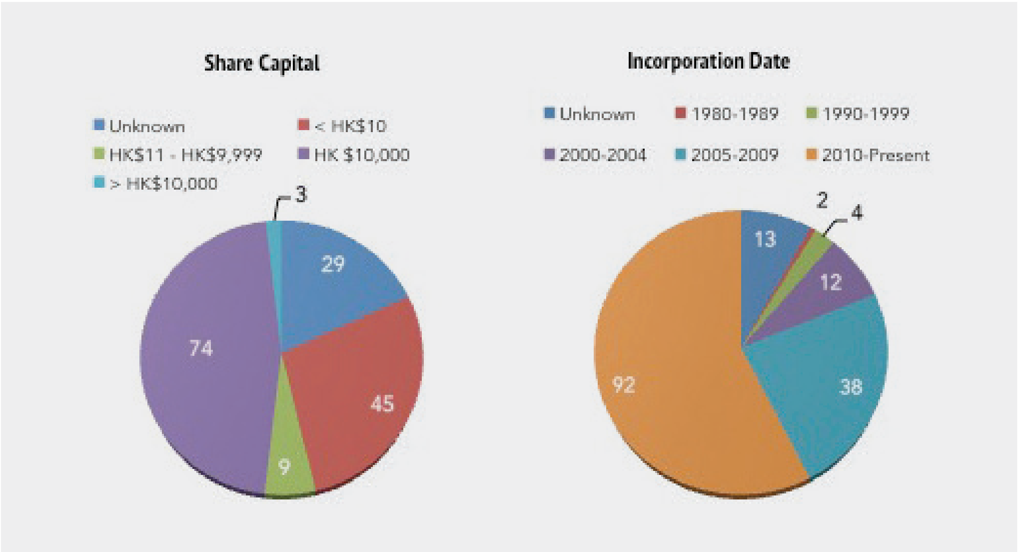
- Each ship has been registered to an average of 2.67 different countries over its lifetime.
- On average, each ship listed 2.38 different companies as registered owners and 1.69 companies as beneficial owners.
- Approximately 90% of the ships were under 10,000 tons in deadweight.

Trend Analysis: The Front Companies

To operate its shipping fleet, North Korea relies on a series of front companies to obfuscate real ownership. Within our final dataset, we identified a total of 248 companies, 160 of which were registered in Hong Kong. These 160 companies represent both ship management companies, as well as the companies managed by those companies' directors. A large number of these companies appear to bear the hallmarks of shell companies, including an extremely small share capital, a recent incorporation date, little evidence of significant commercial activity, and obfuscated ultimate beneficial ownership.

The preponderance of Hong Kong based companies, while notable, is not necessarily a judgment on the role of Hong Kong in North Korea's overseas networks. Rather, it is an acknowledgment that data was significantly more accessible in Hong Kong than in any other jurisdiction. Hong Kong corporate regulations mandate companies have at least one director, shareholder, and company secretary (a position often outsourced to specialized secretarial services companies).[35] All company directors and shareholders must supply various forms of documentation, including copies of passports, bank reference proofs, and overseas residential address proof for non-resident nationals.[36]

Figure 5: Corporate Registration Trends



Source: C4ADS

Each company must maintain accounts that are audited annually by Certified Public Accountants (CPAs) in Hong Kong and must supply audited financial statements and annual returns to relevant agencies.[37] As a result, we were able to acquire corporate registration and annual return documents to identify and map directors, shareholders, and associated entities, as well as any overlaps between each of the 160 companies.

Of the 160 companies in the Hong Kong sample:

- 131 listed their respective share capital details, which ranged from HK$1 (USD $.13), which is the minimum amount required to register a company, to HK$79 million (USD $10,172,875).
- 23% of the companies in our sample had the minimum share capital of HK$1, while 30% had a share capital lower than HK$100 (USD

$64.39). 46% of companies had a share capital of up to HK$10,000 (USD $1,287.71), and only 2% or three companies had a share capital larger than HK$10,000.

- Only 3% or five of the 147 companies that listed their date of incorporation were registered before January 1, 2000. By contrast, 58% of the companies were registered in the past five years, between January 1, 2011 and December 31, 2015.

- Only one ship was owned or managed by the three companies that listed share capital above HK $10,000, while 36 ships were owned or managed by companies with a share capital of HK $1.

- Of the subset where data was available, 76% of companies based in Hong Kong listed their registered office address as that of their Company Secretary, an indicator cited repeatedly in Suspicious Activity Reports by the United States Department of the Treasury's Financial Crimes Enforcement Network (FinCEN).[38]

Trend Analysis: Nominee Incorporation Services

Upon closer investigation, we found strong convergence between companies in our sample with regard to their company secretaries. In our extended sample, we identified 160 companies registered in Hong Kong. Of those, 82, or 51% of the companies, owning or managing 58 ships, were represented by only six company secretary firms.

According to Hong Kong law, each company is required to have a company secretary who is responsible for key financial and due diligence functions, including maintaining company accounts and registers, ensuring compliance with regulations, and advising directors on corporate governance.[39] This responsibility is often entrusted to specialized firms that offer these administrative services. None of the directors or shareholders of the six Hong Kong company secretaries with strong ties to North Korea are reported to be members of the Hong Kong Institute of Chartered Sectaries, an independent body of nearly 6,000 members dedicated to the development of chartered secretaries in Hong Kong.[40]

Several of these company secretaries are themselves registered in secrecy jurisdictions, allowing them to further obfuscate their beneficial owners. For example, of the six company secretaries mentioned above, one is owned by an entity in Samoa, and another lists a company in the British Virgin Islands as its sole director and owner.[41] A third, Winning International Consulting Group Ltd., was also identified by the UN Panel of Experts on North Korea as one of the company secretaries for Leader (Hong Kong) International Trading Ltd.,[42] an entity that was sanctioned for facilitating shipments on behalf of Korea Mining Development Trading Corporation (KOMID), a North Korean weapons proliferation organization.[43] Despite this, the company, according to its 2015 annual return, lists an American national as its director with an address in Los Angeles.[44]

This use of offshore business centers and facilitators, particularly secretarial services in Hong Kong to obscure beneficial ownership for illicit transactions, appears to be a growing phenomenon. According to data provided by researchers at SIPRI, on at least three occasions,

> Hong Kong-registered secretarial companies have played a critical facilitation role, acting on behalf of three companies, including the owner of the ship that transferred vehicles adapted as ballistic missile Transporter Erector Launchers (TELs) from China to North Korea in August 2011; the owner of another ship intercepted on suspicion of transferring missile technology to Myanmar in May 2011; and the owner of a logistics company that shipped prohibited dual use goods seized en route to Syria in September 2010.[45]

Part II: Network Investigation

From the baseline sample we generated in Part I, we identified specific entities in the data set for targeted network examination. Using these starting points, we constructed networks and analyzed activities to provide insight into how public exposure and regulatory measures such as sanctions influence and alter DPRK overseas activity. Wherever possible, we prioritized the identification of unsanctioned companies associated with sanctioned entities, which could represent vectors for ongoing proliferation activities and hard currency generation for the DPRK. More investigation will be required to establish definitive evidence of illicit activity.

Trading Empires

It is known that the DPRK transacts billions of dollars of business abroad, but the patterns of this trade are generally not well understood. During the course of our investigation, we identified over $500 million of imports to and exports from the DPRK associated with one specific Chinese trading conglomerate. Its subsidiaries and affiliated entities have transacted with sanctioned Burmese and North Korean entities, have been associated with North Korean cyber operators, and have traded in various goods and services that could represent serious proliferation concerns.

One of the ships in our initial sample, the *Pole Star* (IMO: 8405309), is reportedly owned by a Hong Kong company named Hong Xiang 66 (HK) Shipping Ltd.[46] While there is no record of a company with that exact name in the Hong Kong business registry it is likely that the name is short for Hong Xiang 66 (Hong Kong) Shipping Ltd. According to the Hong Kong business registry,[47] the company is solely owned by Chinese national Ma Xiaohong 马晓红.[48] In addition to owning five Hong Kong based companies, Ma Xiaohong is the chairwoman of the Liaoning Hongxiang Group 辽宁鸿祥实业集团, a major trading conglomerate that openly states that it trades heavily with the DPRK.[49]

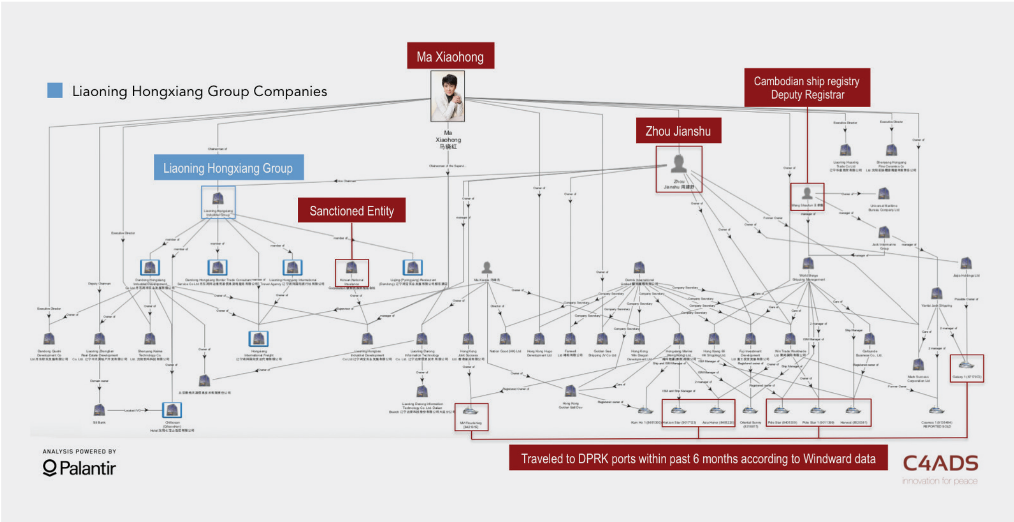
The Liaoning Hongxiang Group is comprised of six companies according to its website:[50]

English Name	Chinese Name
Dandong Hongxiang Industrial Development Co. Ltd.	丹东鸿祥实业发展有限公司
Hongxiang International Freight	辽宁鸿祥国际货运代理有限公司
Liaoning Hongxiang International Travel Service Co Ltd.[51]	辽宁鸿祥国际旅行社
Dandong Hongxiang Border and Trade Consultant Service Co.[52]	丹东鸿祥边境贸易信息咨询服务有限公
Qibaoshan (Chilbosan) Hotel (Sino-DPRK Joint Venture)	沈阳七宝山酒店
Pyongyang (Liujing) Restaurant (Sino-DPRK Joint Venture)	柳京酒店

According to their Chinese business registry filings, these six companies are involved in a wide range of sectors, including industrial trading, hotel management, and consultant services.[53] According to its own website, the Liaoning Hongxiang Group even describes itself as a "bridge between the DPRK and the world."[54] Dandong Hongxiang Industrial Development Co. Ltd., one of the six member companies, imports 99.9% of its goods from the DPRK, according to Panjiva aggregated customs records.[55] Two of the companies within the group, the Chilbosan Hotel and the Pyongyang (Liujing) Restaurant are Sino-DPRK joint ventures.[56] The offices of two of the companies within the group are located in the same complex as the DPRK consulate in Dandong,[57] and the group has played a central role in strategically vital DPRK economic projects.[58] According to Chinese media reports, the Liaoning Hongxiang Group was the Chinese company used to inaugurate the newest China-DPRK shipping route, from Longkou to

Nampo, in late September 2015.[59] The Vice Chairman of the company is a Chinese national by the name of Zhou Jianshu 周建舒.[60]

Figure 6: The Liaoning Hongxiang Group



Source: Palantir visualization of C4ADS data

$500 Million in Trade

The largest of the six companies in the group by registered capital is Dandong Hongxiang Industrial Development Co. Ltd., an industrial machinery and equipment wholesaler and one of the group's two founding companies.[61 62] According to trade records aggregated by Panjiva, the Dandong-based company trades heavily with the DPRK. Records show that, between January 2011 and September 2015, Dandong Hongxiang Industrial Development Co. Ltd. imported $360,543,627 worth of goods from the DPRK, which represents 99% of the company's total imports.[63] Over the same time period, the company exported $171,013,909 worth of goods to the DPRK, representing 78% of total exports.[64] The $532 million of total trade volume is

roughly equivalent to the $560 million earned from the Kaesong Industrial Complex since 2004, but in under half the timeframe.[65] While no judgement is being made on the final use of these funds, trade at this volume is of particular note. By one estimate, this amount would have been almost enough to both fund North Korea's uranium enrichment facilities, and to design, make, and test its nuclear weapons.[66]

Figure 7: Screengrab of Offices from Liaoning Hongxiang Group Website

Source: Liaoning Hongxiang company website
Translation: Focusing on establishing Sino-DPRK trade, a prosperous Dandong regional economy, promoting Sino-DPRK friendship and acting as a global bridge for the Democratic People's Republic of Korea.

U.S. Nexus

While the overwhelming majority of Dandong Hongxiang's trade is with the DPRK, we were able to identify at least 164 shipments exported to the United States.[67] The exports, which included over 2,491 metric tons of mostly glass products from China, were sent to at least 15 U.S. companies.[68] To conduct these U.S. transactions, it is likely that Dandong Hongxiang Industrial

Development Co. Ltd. would have had to use dollar clearing services and U.S. correspondent accounts. It is not known which financial entities facilitated these transactions, but one of Dandong Hongxiang's investments is an equity stake in the Bank of Dandong,[69] an institution that *The Telegraph* reported allegedly allowed money transfers to be sent from China to North Korea in 2013 in several currencies, including U.S. dollars.[70] Foreign money transfers would likely have cleared through North Korea's Foreign Trade Bank, the country's main foreign exchange institution, which was sanctioned by the U.S. Treasury under Executive Order 13382 in 2013 for its role in financing the regime's nuclear weapons program.[71 72]

Figure 8: Dandong Hongxiang Industrial Development's Exports and Imports (Jan 2011-Sep 2015)

Imports by country

Country	Value (USD)	% Share	Trend
All	$362,543,499		
North Korea	$360,451,627		
South Korea	$1,240,710		
United States	$333,002		
India	$267,725		
Malaysia	$208,680		
United Kingdom	$41,755		

Exports by country

Country	Value (USD)	% Share	Trend
All	$219,510,481		
North Korea	$171,013,909		
South Korea	$37,179,080		
Vietnam	$5,093,834		
Jordan	$1,255,832		
Taiwan	$1,032,232		
Thailand	$941,655		
Mongolia	$899,267		
United States	$674,664		
Netherlands	$396,076		
Malaysia	$345,575		

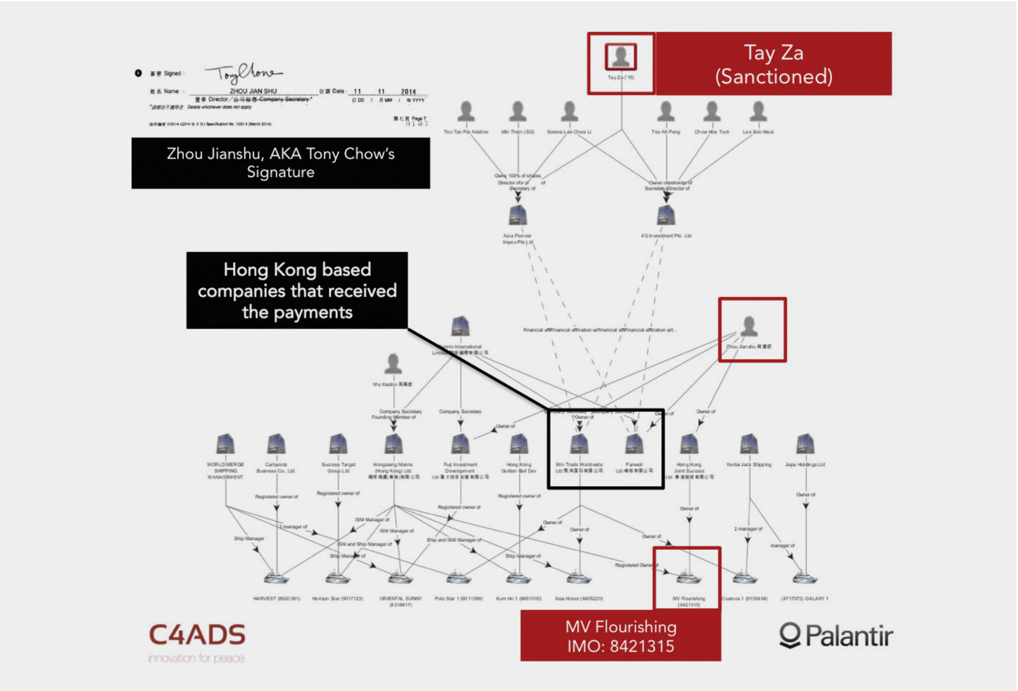
Show 10 more rows ▾

Source: Panjiva trade data

Dealings with Foreign Sanctioned Entities

Companies reportedly owned by the Liaoning Hongxiang Group's Vice Chairman, Zhou Jianshu, appear in a *Forbes* investigative article from August 2014 detailing the business dealings of sanctioned Burmese tycoon, Tay Za.[73 74] According to the article, the companies received payments totaling $300 million, allegedly for the supply of diesel, from two of Tay Za's Singapore-based companies: Asia Pioneer Impex Pte Ltd. and 4G Investment Pte Ltd. According to the *Forbes* article, the transactions occurred as late as March 2011. Although Tay Za was designated by the U.S. Department of the Treasury in October 2007, Asia Pioneer Impex Pte Ltd. was not added to the Treasury SDN list until November 2012 (4G Investment Pte Ltd. remains unsanctioned).[75 76 77] The payments were reportedly sent to five Hong Kong companies, several of which display close ties to sanctioned and unsanctioned North Korean entities.

Figure 9: Chart of Connections between Tay Za and Zhou Jianshu



Source: Palantir visualization of C4ADS data

Since 2007, Tay Za has been designated by the U.S. Department of the Treasury as, "an arms dealer and financial henchman of Burma's repressive junta."[78 79] Tay Za has extensive interests around Myanmar, including in the aviation, military equipment, and fuel sectors.[80] Among his and his sons' business interests are a football club,[81] one of the country's largest banks, as well as companies that manage all cargo clearing for the country's international airports.[82] Tay Za was also alleged to have ties to North Korea, based in large part on the testimony of a defected (and now deceased) financial manager at his Htoo Group. According to the testimony collected and reported on by the *Sydney Morning Herald*, the defector claimed that the Htoo Trading Company "organized nuclear contracts with Russia and North Korea," including the construction of a secret military reactor in Naung Laing, Myanmar.[83]

Five companies—Fanwell Ltd., Goldtec Trading Group Ltd., Win Trade World Wide Ltd., Ocean Wide Trading (Hong Kong) Ltd., and Fortune Sun International Trading Ltd.—reportedly received payment from Tay Za.[84] These companies display significant overlap, and several have documented ties to the North Korean regime. Fortune Sun International Trading Ltd., for example, has been publicly identified as a front company for Tanchon Commercial Bank (TCB), a U.S. Department of the Treasury-sanctioned North Korean financial institution.[85 86] Fortune Sun, according to its business registry filling, was dissolved in July 2014,[87] but its director and sole shareholder, a Chinese national named Sun Zhengzhe, shares an almost exact residential address match with the director and sole shareholder of Goldtec Trading Group, another of the companies that received payment. The two addresses, as seen in Figure 10 in excerpts from the companies' annual returns.[88 89]

Two other companies, Fanwell Ltd. and Win Trade Worldwide Ltd., are solely owned by Zhou Jianshu.[90] According to the Hong Kong business registry, Zhou currently owns three additional companies in Hong Kong, and

Figure 10: Burmese Recipient Companies Annual Returns

	姓名/名稱 Name	地址 Address	股份 Shares			備註 Remarks
			現時持有量 Current Holding	轉讓 Transferred		
				數目 Number	日期 Date	
Fortune Sun International Trading	SUN ZHENG ZHE (孫正哲)	NO.3-2-24, GUANGMIN HUTONG, NO.16 ZU, NO.11 WEI, BEIJI JIE, CHUANYING QU, JILIN SHI, JILIN, CHINA	10,000			
Goldtec Trading Group Ltd	SUN FENG (孫峰)	RM 3-2-24, GUANGMING HUTONG, CHUANYING QU, JILIN SHI, CHINA	10,000			

Source: Hong Kong Companies Registry

Figure 11: Share Transfer of Mark Success Corp. from Zhou Jianshu to Ma Xiaohong

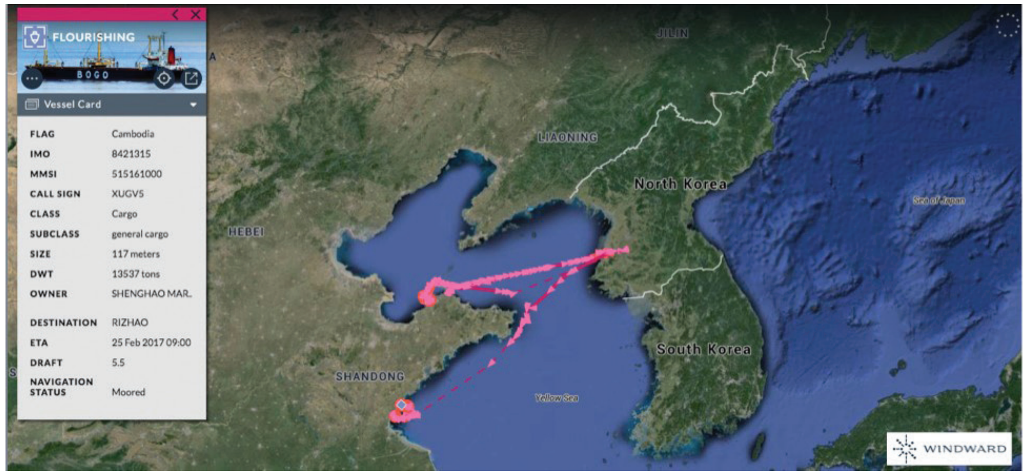
姓名/名稱 Name	地址 Address	股份 Shares			備註 Remarks
		現時持有量 Current Holding	轉讓 Transferred		
			數目 Number	日期 Date	
ZHOU JIAN SHU (周建舒)	Room 511, No. 31 Caishenmiao Street, Yuanbao District, Dangdong City, Liaoning Province, China.		1	26-3-2014	Transferred to MA. XIAOHONG
MA XIAOHONG (馬骁紅)	Room 202, Unit 1, 72 Bawei Road, Zhenxing District, Dandong City, Liaoning Province, China.	1			

Source: Hong Kong Companies Registry

is the former owner of a sixth company, Mark Success Corporation Ltd.[91] Business registry records show that the company's shares were transferred to Ma Xiaohong in March 2014 (Figure 11).

One of Zhou Jianshu's companies, Hong Kong Joint Success Co. Ltd.,[92] is the registered owner of the *MV Flourishing* (IMO: 8421315), a Cambodian-flagged ship.[93] Data from the Windward system shows the ship's activities over a 60-day period from February to April 2016, during which time it maintained a regular route between coal terminals in the Chinese ports of Rizhao and Longkou and the North Korean port of Nampo.

Figure 12: *MV Flourishing* Activity (Feb-April 2016)

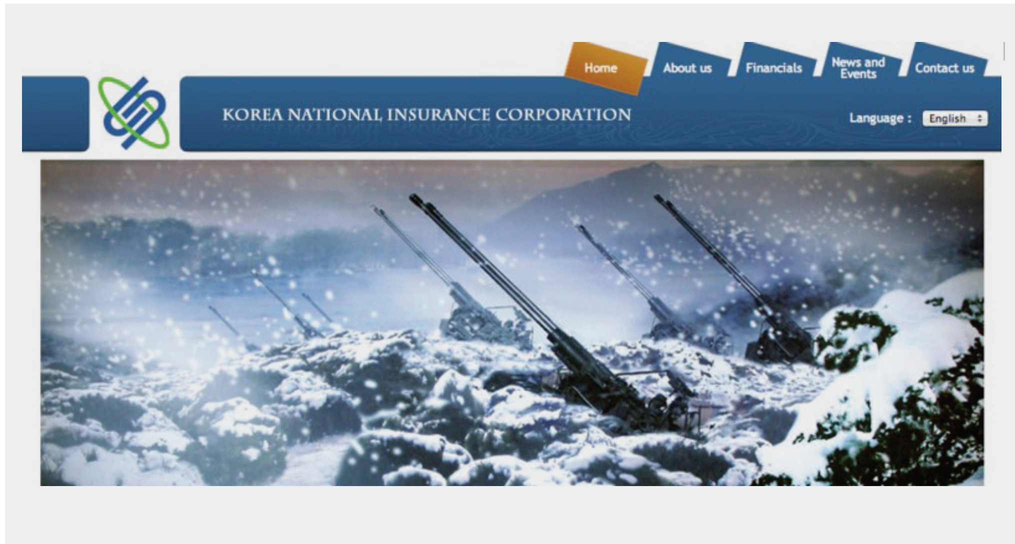


Source: Windward Maritime Analytics System

Dealing with DPRK Sanctioned Entities

According to the Chinese business registry, in May 2009, Dandong Hongxiang Industrial Development Co., one of the six core companies within the Liaoning Hongxiang Group, entered into a joint venture with the Korea National Insurance Corporation (KNIC) to form Liaoning Hongbao Industrial Development Co. 辽宁鸿宝实业发展有限公司.[94] According to the Chinese business registry, Liaoning Hongbao Industrial Development Co. Ltd. engages in wholesale trade of textiles, stationery, electrical equipment, and other goods.[95] KNIC, a North Korean entity, has been cited several times for suspicious practices around the world and for its connection to weapons proliferation financing. In 2008, KNIC was involved in an apparent case of insurance fraud when it settled an insurance claim by the North Korean airline Air Koryo.[96] [97] Several reinsurance companies in Europe lodged complaints but because of contractual agreements to be bound by DPRK law and jurisdiction, were forced to send $60 million as insurance compensation to North Korea.[98] In July 2015, the European Commission sanctioned the German branch of KNIC and six of the company's officers as a subsidiary of the company's headquarters in Pyongyang. The Commission stated that KNIC was a government entity generating substantial foreign exchange

Figure 13: Korea National Insurance Corporation (KNIC) Website Homepage



Source: Homepage of KNIC website. Last accessed on July 15, 2016.

revenue, which was used to support the North Korean regime.[99] The European Commission memo explicitly stated, "Those resources could contribute to the DPRK's nuclear-related, ballistic missile-related or other weapons of mass destruction-related programmes."[100]

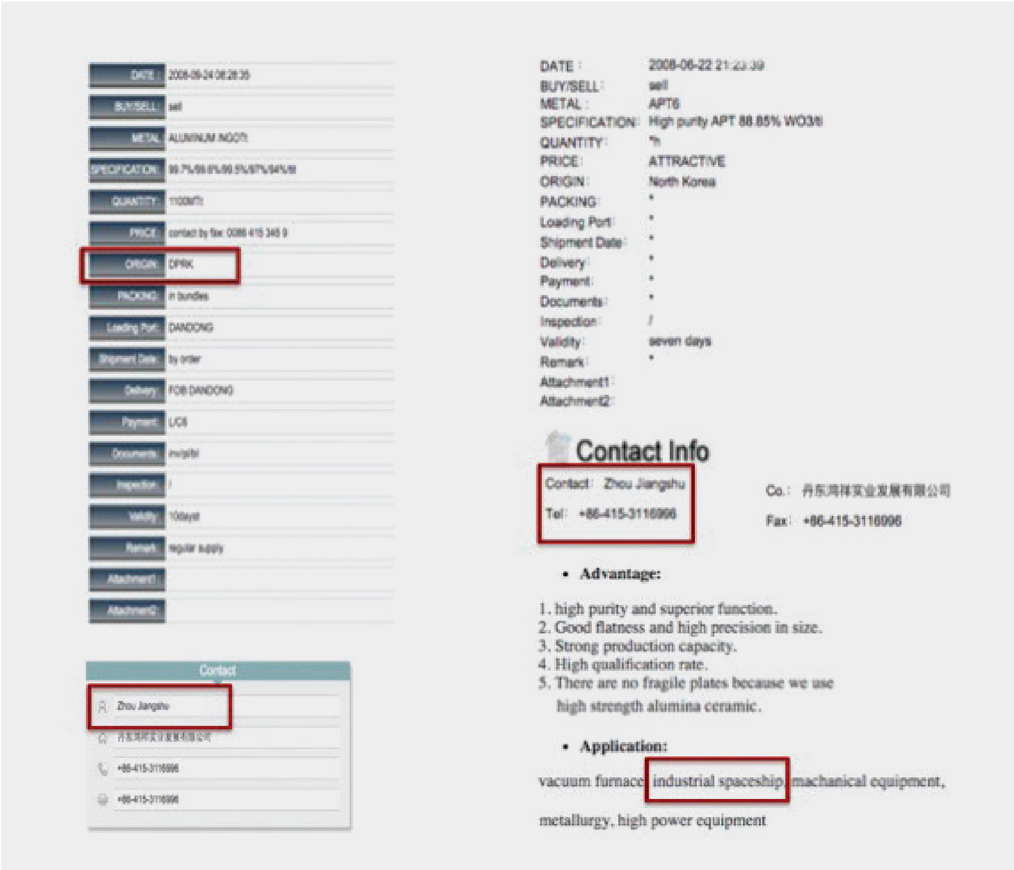
KNIC and a sister organization, the North East Asia Bank (NEAB) reportedly operated under the North Korean Workers Party Organization and Guidance Department (OGD).[101] As stated by North Korean defector Jan Jin-sung, "The only entity that actually matters when it comes to decision-making or policy-making is the Organization and Guidance Department."[102] Before his 2013 purge and execution[103] it was rumored that Kim Jong Un's uncle, Jang Sung-taek, was in control of the OGD.[104]

Proliferation Concerns

Information found on Dandong Hongxiang Industrial Development Group shows that in several online classified ads and databases, Dandong Hongxiang sold products that could qualify as potential military and nuclear dual use products under the U.S. Department of Commerce Bureau of Industry and Security export restrictions.[105] These goods included at least four dual use products: 99.7% pure aluminum ingots,[106] aluminum oxide (Al_2O_3), ammonium paratungstate (APT), and tungsten trioxide (WO_3).[107] Information discovered using Panjiva customs records shows that Dandong Hongxiang Industrial Development Group sent two shipments of aluminum oxide worth a total of $253,219 to the DPRK as recently as September 2015.[108] Classified ads posted by Shenyang Hongyang Fine Cermaics Co., which according to the Chinese business registry is owned by a Chinese national named Ma Xiaohong 马晓红, listed "industrial spaceship" as a potential application for aluminum oxide (further investigation is required to confirm if they are the same individual).[109] [110]

We cannot definitively identify the end-user of such goods, but there are

Figure 14: Classified Ads Showing Possible Dual Use Materials



Source: Classified adverts posted on asianmetal.com and globalsources.com

clear dual use applications for the products listed. According to a leaked government cable, North Korea has sought to aquire aluminum ingots in the past. The cable further states that "these commodities have dual-use applications and could possibly be linked to the North Korean nuclear program."[111] Ammonium paratungstate and tungsten trioxide are byproducts of separating tungsten from its ore.[112] A U.S. patent filed in 2010 states that tungsten trioxide is one of several oxidizing agents appropriate for use in a missile design with increased aerodynamic stability.[113] According to the U.S.

Nuclear Regulatory Commission, aluminum oxide is a component used to resist corrosion in gas centrifuges during uranium enrichment.[114] In April 2013, a British company discovered that a firm they had been sending aluminum oxide to had links to the Iranian government's nuclear program and immediately "ceased transactions. The article stated that "Aluminium oxide is an important material in gas centrifuges used to enrich uranium."[115]

Cyber Architecture

The DPRK's cyber activities are among the newest additions to the sanctions measures. The March 2016 Executive Order by President Obama specifically included cyber security among its provisions, targeting any entities known "to have engaged in significant activities undermining cyber security through the use of computer networks or systems against targets outside of North Korea."[116] Companies associated with the Liaoning Hongxiang Group provide services that are critical to the underlying cyber architecture of the DPRK, including the country's primary email relay service, facilities from which hackers are alleged to operate, and IT firms producing software with possible military and regime applicability as will be discussed in this section.

The Chilbosan Hotel 沈阳七宝山酒店 in Shenyang, one of Liaoning Hongxiang's joint ventures with the DPRK,[117] is alleged to be the staging area for Bureau 121, a group of North Korean hackers.[118] [119] The source of the allegations is a North Korean defector, Kim Heun Kwang, a former computer science professor in Pyongyang, who escaped from North Korea in 2004 and gave detailed testimony on Bureau 121, a group that began large-scale operations in China in 2005.[120] The group is reported to be comprised of about 1800 "cyber-warriors" and is considered the "elite of the military."[121] It has been widely reported that Bureau 121 may have been responsible for the 2014 Sony hack.[122] The Chilbosan Hotel is majority owned by the North Korean Pyongyang Economic Exchange Society 朝鲜柳景经济交流社,[123] which controls a 70% share of the company.[124] The remaining 30% is owned by Liaoning Hongxiang Group member Dandong Hongxiang Industrial Development Co. Ltd.

Internet communications are severely restricted in the DPRK. There are reportedly as few as 7,000 total Internet users in the country,[125] and the country's cyber architecture is controlled through tiered information access. Most North Koreans are only able to access the domestic North Korean intranet, or *Kwangmyong*, giving them access to a self-contained set of content, pre-filtered by the state.[126] The Chilbosan Hotel also shares a physical address with a company called Silibank.[127] [128] Silibank is an email relay service that charges for sending and receiving email through servers that connect from the DPRK, through China, and then to the outside world. Established in September 2001, Silibank is reportedly the DPRK's first ISP provider,[129] charging for its service in USD for each kilobyte sent.[130] The company's domain, silibank.com, is currently registered to a Chinese company called Liaoning Zhongtian Real Estate Development Co. 辽宁中天房地产开发有限公司.[131] According to its Chinese business filing, Liaoning Zhongtian Real Estate Development Co. is also a joint venture between North Korean Pyongyang Economic Exchange Society 朝鲜柳景经济交流社[132] and Dandong Hongxiang Industrial Development Co. Ltd. and lists the same address as the Chilbosan Hotel in its business filings.[133] Silibank has also hosted email services for a number of sanctioned entities, including Korea Ryonha Machinery Joint Venture Co. and its subsidary Millim Technology, which list their contact information as ryonha@silibank.com and millim@silibank.com respectively.[134] One Silibank email address is listed by the President of the Pyongyang-based weapons proliferator Green Pine Association, Ri Hak Chol, in his correspondence with the Eritrean government in an attempt to make a deal for "military and technical support."[135]

As evidenced by its cyber attacks, the DPRK cyber architecture is growing increasingly robust. In part, this appears to be a result of significant investment in acquiring technology and software, which, while rudimentary by international standards, could represent a significant leap in DPRK capabilities. One key investment by the Liaoning Hongxiang Group is through its subsidiary, Dandong Hongxiang Industrial Development Co.

Figure 15: Liaoning Darong Information Technology Company Products

Source: Liaoning Darong Information Technology Company website
Translation: Remote Sensing Image Processing, 3D Digital City, Survey Map Engineering, Industrial Solutions, Program Manufacturing, Geographic Mapping (beginning top left moving clockwise).
Note: Figure was reconstructed for clearer visibility.

Ltd., which was a 49% shareholder in a Beijing IT firm named Beijing Tuxiu Tianya Information Technology Co. Ltd. 北京图秀天涯信息技术有限责任公司[136] until June 2015.[137] The firm is a subsidiary of a larger company, Liaoning Darong Information Technology 辽宁达荣科技股份有限公司, of which both Ma Xiaohong and Zhou Jianshu were company officers until December 2015.[138] Based in Dandong, the company has branches in Beijing and Henan province and was founded in 1998.[139] The company has seen significant recent activity. In December 2015, it changed its name from Liaoning Darong Information Technology Co. Ltd. 辽宁达荣信息技术有限公司 to Liaoning Darong Technology Joint Stock Co. Ltd. 辽宁达荣科技股份有限公司, while its share capital increased 575%, from 7,399,000 RMB (USD $1,129,618) to 50,000,000 RMB (USD $7,656,967).[140] Its management structure also changed, with Ma Xiaohong becoming Chairman of the Board of Supervisors from the position of Vice Chairman.[141]

The company's listed IT products include aerial and satellite imagery, remote sensing, engineering measurement, and systems integration.[142]

Natural Resource Shipping Fleet

According to insights derived from Windward's Maritime Analytic System, the Liaoning Hongxiang Group is heavily involved in DPRK-related shipping. Individuals and entities within the network, including Ma Xiaohong and associated directors and officers of the group, reportedly own and operate a combined fleet of 10 ships that, according to Windward data, regularly move between China and the DPRK.[143] Several of these ships appear to carry natural resources, particularly coal. While customs records for all of Zhou's companies are not available, core companies of the Liaoning Hongxiang Group are heavily involved in the coal trade. Customs records for Dandong Hongxiang Industrial Development Co. Ltd. state that the company imported $231,945,423 of minerals and natural resources from the DPRK from January 2011 to December 2013.[144]

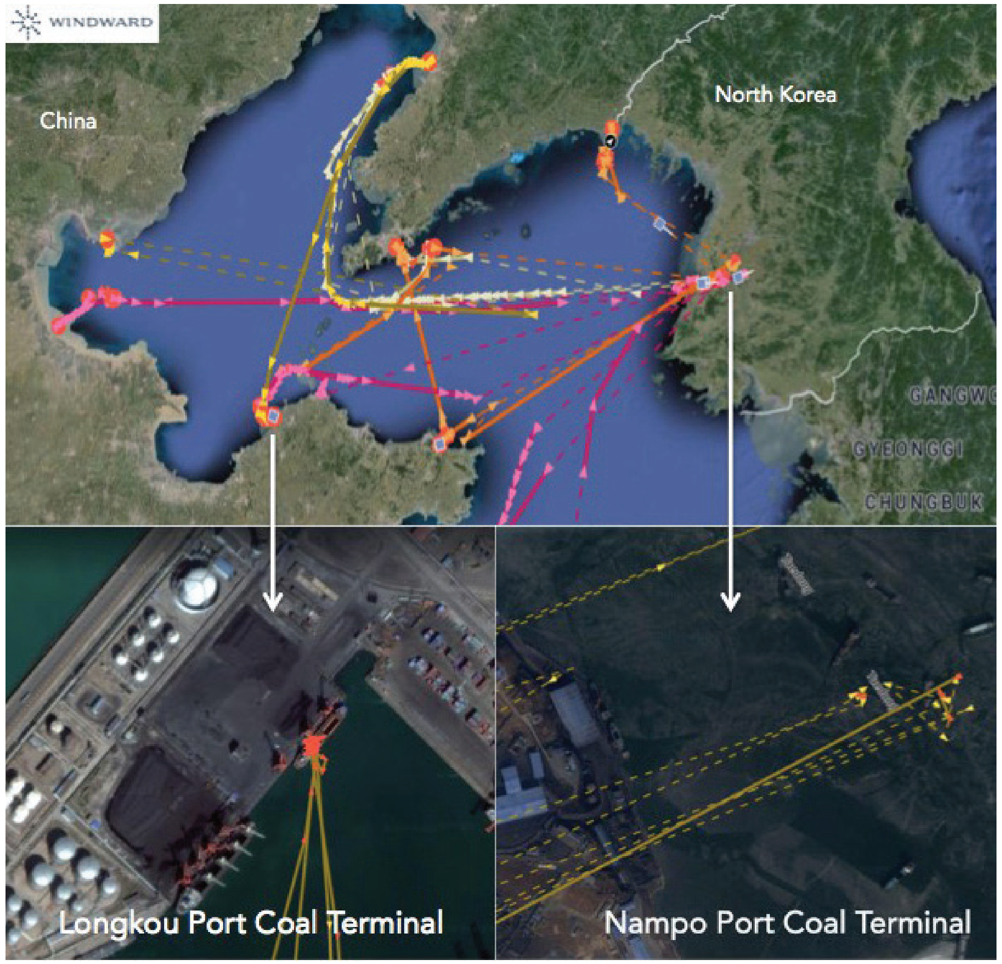
Figure 16: Liaoning Hongxiang Group Shipping Network

Ship Name	# Name Changes*	# of Company Changes	Flag	Prior Flag	Reported Beneficial Owner
Pole Star	4	22	Cambodia	ROK	China Gov't
Pole Star 1	2	12	Cambodia	N/A	Unknown
Horizon Star	2	12	Sierra Leone	Mongolia	Unknown
Kum Ho 1	3	8	Cambodia	DPRK	Unknown
Harvest	5	21	Cambodia	Panama	Unknown
Oriental Sunny	4	15	Cambodia	Panama	Unknown
Asia Honor	3	18	Cambodia	Panama	Unknown
Flourishing	5	25	Cambodia	DPRK	Unknown
Cosmos 1***	2	17	Togo	Mongolia	Unknown
Galaxy 1****	1	6	Mongolia	Panama	Unknown

Source: Equasis Maritime Database
* Name and company (ISM, Owner, Ship Manager, Beneficial Owner) since 2000; Beneficial owner identified by Equasis
** Current location confirmed with Windward Maritime Analytic System
*** COSMOS 1 appears sold in 2015
**** Galaxy 1 appears sold in 2016

Ma Xiaohong is reportedly the sole owner of five Hong Kong based companies that own and manage five ships,[145] while Liaoning Hongxiang Group company officers, Ma Xiaojie and Ma Xiaobo own Hong Kong companies that manage four more[146] (any familial relation between these two individuals and Ma Xiaohong is unknown). Zhou Jianshu reportedly owns another two, as described earlier in the paper.[147] Details on these ships, based on Windward's data and analytics over a 60-day period between March and April 2016, can be seen in Figure 17. Nearly all of the ships regularly transit between the DPRK and northern China. Several dock at the main cargo port of Nampo, but others travel further up to the Taedong River to

Figure 17: Liaoning Hongxiang Group Shipping Network Activity (Feb-April 2016)



Source: Windward Maritime Analytics System

the inland ports of Taean and Songnim, which are major coal and iron export hubs, respectively.[148 149] As represented by the dotted lines, many appear to operate with inactive, malfunctioning, or disabled automatic identification system (AIS) transponders for long periods.

The natural resources trade, coal in particular, is known to be an especially critical North Korean national industry. Coal exports alone represent over one third of annual DPRK exports.[150] According to Nam Jae-joon, the Head of South Korea's National Intelligence Service, Jang Sung-taek, the powerful uncle of Kim Jong-un, was purged partially because of his attempts to control state-run natural resources.[151] Nam was quoted as stating, "Jang intervened too much in lucrative state businesses...related to coal, which drew mounting complaints from other (related) state bodies."[152] In Figure 17, Windward data indicates several of the ships docked at what appear to be coal terminals in both the DPRK and China.

The Cambodian Ship Registry

In addition to direct ownership and management of ships, companies associated with the Liaoning Hongxiang Group also reportedly play key roles in the management of the Cambodian ship registry. This type of activity is not new. A June 2015 investigation by Andrea Berger of the Royal United Services Institute (RUSI) produced evidence that North Korean overseas support networks had previously infiltrated the Cambodian ship registry. Her research showed that Leonard Lai, a key Singaporean supporter of North Korea who was designated by the U.S. Treasury in 2015,[153] and his network had managerial roles in not just the Cambodian Ship Registry, but also the ship registries of Kiribati, Tuvalu, and Niue until 2002.[154]

In response to this mismanagement, the Cambodian Ship registry was reorganized. Since 2003, ship flagging rights in Cambodia have been managed by a company called International Ship Registry of Cambodia (ISROC), which is a joint venture between the Cambodian government and a South Korean company, the Cosmos Group.[155] ISROC has modernized and streamlined the ship flagging system in Cambodia. To increase efficiency, the system is now decentralized, with ship flagging rights assigned to a series of "deputy registrars." On its website, ISROC lists 27 deputy registrars.[156] According to the company website the deputy register role is described as follows: "For convenient and swift ship registration process, ship owners and clients can freely contact to the following Deputy Registrars' offices officially appointed by ISROC at each important ports and countries [sic] in the world at any time."[157]

One of the 27 listed deputy registrars for ISROC is Wang Shau-fun[158] of World Merge Shipping, a member of Jack Intermaritime Group, which is the manager for four of the 10 identified ships, as well as the listed "Care of" manager for two companies in the Liaoning Hongxiang shipping network.[159]

A map on the Jack Intermaritime Group website shows that the group has seven offices in East Asia, including in Dalian, China. This Dalian branch is listed as Dalian Jack Shipping Management Co. Ltd. 大连杰克船舶管理有限公司.[160] Classified ads posted for Dalian Jack Shipping Management Co. Ltd. record the company's contact person as Fan Mintian 范民田.[161] While further investigation is necessary to verify any connection, this name is identical to one of the owners of the management company of the *MV Light*, the North Korean ship intercepted by the U.S. Navy that was suspected of sending proliferation material to Myanmar.

Figure 18: Dalian Jack Shipment Management Co. Ltd. Company Contact Person

Source: Chinese online trading list and company website sceengrab

Conclusion

The DPRK's overseas networks are a lifeline for the Kim regime, but they also represent a key point of vulnerability. Unlike entities located inside North Korea, DPRK overseas networks are relatively unprotected, and are vulnerable to international financial and regulatory pressure. UN Resolution 2270 attempts to capitalize on this vulnerability. The sanctions mandate has expanded significantly to include mandatory inspection of all foreign-bound DPRK cargo, as well as so-called "secondary sanctions" that can deny access to the U.S. financial system to any third parties that continue to deal with DPRK sanctioned entities.

Implementation of these mandates is now required. Specific steps to enhance enforcement include:

- **Enhanced financial intelligence and shorter response time from initial identification of DPRK sanctions violating entities to sanctions designation.** DPRK entities rapidly change their names, companies, and ownership structures after exposure. In the absence of a sanctions guidance update, many private-sector entities, including banks, shipping companies, and traders, will be deprived of information needed to identify and block the requested transactions. UN designations are particularly important, as even close U.S. allies such as Singapore refrain from enforcing unilateral U.S. sanctions.[162]

- **Use existing provisions such as Section 311 of the USA Patriot Act to target North Korean banks and financial institutions that represent entities of primary money laundering concern.** The 2005 action taken by the U.S. against the Macao-based bank, Banco Delta Asia (BDA), is the only comparable action to date: within six days, 34% of deposits had been withdrawn in a run on the bank,[163] and within six months, the institution had become a "financial pariah as according to its lawyers."[164] In today's environment, even such a limited action could have a cascading effect by triggering a broad closure of North Korean accounts by financial institutions unwilling to risk secondary sanctions.

- **Proactively monitor the DPRK's foreign flagged fleet to ensure enforcement of the mandate to inspect all DPRK related cargo.** More robust policing of environmental safety standards can be one way to weed out the DPRK fleet, renowned for its notoriously poor standards. Between January 1, 2015 and February 29, 2016, the Tokyo MoU (the Memorandum of Understanding on Port State Control in Asia-Pacific Region) revealed 334 inspections of DPRK flagged ships. Nearly all were cited for deficiencies, and 32 ships were detained, a detention ratio of 9.6%.[165]

- **Reaffirm that the Chinese Government will more actively monitor and enforce UN Security Council Resolutions on the DPRK.** While abiding by relevant resolutions against the DPRK, China has so far taken only administrative measures, such as inspection of cargo originating from the DPRK or destined for the DPRK. The Chinese government should instead apply China's commercial law against suspicious Chinese entities involved with the DPRK's violations of Resolution 2270.

- **Request that the member states of the UN add suspicious third party entities to the existing list of sanctioned individuals and entities.** This step should also be taken by the member states that have implemented unilateral sanction measures against the DPRK and its affiliates and partners overseas, independent of the actions of the UN Security Council.

Going after the DPRK's alternative income sources is likely to be the surest means for the international community to coerce the Kim Jong-un regime into abandoning its nuclear weapons program. Getting there, however, will require significantly expanded efforts to continually investigate, monitor, and act against DPRK entities evading sanctions.

Endnotes

1. Kerry, J. (2016, March 2). Adoption of UN Security Council Resolution 2270 on North Korea. *U.S. Department of State*. Retrieved from http://www.state.gov/secretary/remarks/2016/03/253877.htm.
2. (2016, February 29). United States of America: Draft Resolution. *United Nations Security Council*. Retrieved from https://www.documentcloud.org/documents/2730535-010316-DPRK-Draft-Res-Blue-E.html#document/p1.
3. Giffiths, H., Dermody, L. (2014, May 6). Loopholes in UN Sanctions against North Korea. *38 North*. Retrieved from http://38north.org/2014/05/griffithdermod050614/print/.
4. Ibid.
5. (2009, July 15). Background Briefing on North Korea. *Bureau of Public Affairs, U.S. Department of State*. Retrieved from http://www.state.gov/r/pa/prs/ps/2009/july/126093.htm.; Sigal, L. (2013, May 3). How North Korea Evades Financial Sanctions. *38 North*. Retrieved from http://38north.org/2013/05/lsigal050313/.
6. (2016). Sanctions Search List. *Office of Foreign Assets Control*. Retrieved from https://sanctionssearch.ofac.treas.gov/.
7. (2016, April 28). Consolidated United Nations Security Council Sanctions List. *United Nations Security Council*. Retrieved from https://www.un.org/sc/suborg/sites/www.un.org.sc.suborg/files/consolidated.pdf.
8. (2016, March 24). Frequently Asked Questions Relating to the Lifting of Certain U.S. Sanctions under the Joint Comprehensive Plan of Action (JCPOA) on Implementation Day. *U.S. Department of the Treasury*. Retrieved from https://www.treasury.gov/resource-center/sanctions/Programs/Documents/jcpoa_faqs.pdf.
9. (2016). Sanctions Search List. *Office of Foreign Assets Control*. Retrieved from https://sanctionssearch.ofac.treas.gov/.
10. (2015, September 20). 2014년 북한의 대외무역동향. *Global Window*. Retrieved from http://www.globalwindow.org/gw/krpinfo/GWKITR020M.html?BBS_ID=16&MENU_CD=M10403&UPPER_MENU_CD=M10401&MENU_STEP=2&ARTICLE_ID=5031941&ARTICLE_SE=20346 - DETAILED TRADE STATS in KOREAN.
11. Ibid.
12. Greitens, S. C. (2014, April 15). Illicit: North Korea's Evolving Operations to Earn Hard Currency. *Committee for Human Rights in North Korea*. Retrieved from https://www.hrnk.org/uploads/

pdfs/SCG-FINAL-FINAL.pdf.
13. (2015, February 23). Note by the President of the Security Council. *United Nations Security Council*. Retrieved from http://www.ncnk.org/resources/publications/DPRK_Panel_of_Experts_2015.pdf.
14. Furukawa, K. (2015, April 20). The Sanctions Regime of UN Security Council Resolutions 1718 (2006), 1874 (2009), 2087 (2013) and 2094 (2013). Retrieved from https://csis.org/files/attachments/150406_FurukawaPresentation.pdf.
15. Andrea Berger (2015) III. Resilient Customers, *Whitehall Papers*, 84:1, 63-112, DOI: 10.1080/02681307.2015.1113088.
16. (2016, March 16). Resource Center: North Korea Designations. *U.S. Department of the Treasury*. Retrieved from https://www.treasury.gov/resource-center/sanctions/OFAC-Enforcement/Pages/20160316.aspx.
17. (2015, February 23). Note by the President of the Security Council. *United Nations Security Council*. Retrieved from http://www.ncnk.org/resources/publications/DPRK_Panel_of_Experts_2015.pdf.
18. *Equasis*, Retrieved from http://www.equasis.org/; North Korea Designations. *U.S. Department of the Treasury*. Retrieved from https://www.treasury.gov/resource-center/sanctions/OFAC-Enforcement/Pages/20160316.aspx.
19. https://www.treasury.gov/resource-center/sanctions/SDN-List/Pages/default.aspx.
20. (2012, June 14). Note by the President of the Security Council. *United Nations Security Council*. Retrieved from http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/NKorea%20S%202012%20422.pdf.
21. Sanger, D. E. (2011, June 12). U.S. Said to Turn Back North Korea Missile Shipment. *The New York Times*. Retrieved from http://www.nytimes.com/2011/06/13/world/asia/13missile.html?_r=0.
22. Starr, B. (2011, June 14). U.S. Wanted to Board North Korean Merchant Vessel, Pentagon Says. *CNN*. Retrieved from http://www.cnn.com/2011/US/06/13/north.korea.ship/.
23. *Equasis*. Retrieved from http://www.equasis.org/.
24. (2016, February 24). Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009). *United Nations Security Council*. Retrieved from http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2016_157.pdf 231.
25. Ibid.
26. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
27. Ungku, F. (2016, January 29). Singapore Slaps S$180,000 Fine on North Korea-Linked Shipper. *Reuters*. Retrieved from http://www.reuters.com/article/us-chinpo-shipping-singapore-northkorea-idUSKCN0V70JV.
28. Griffiths, H., Siirtola, R. (2013, August 27). Full Disclosure: Contents of North Korean Smuggling Ship Revealed. *38 North*. Retrieved from http://38north.org/2013/08/hgriffiths082713/print/.
29. (2013). Cargo Manifest. *38 North*. Retrieved from http://38north.org/wp-content/uploads/2013/08/Cargo-Manifest.pdf.
30. (2016, February 24). Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009). *United Nations Security Council*. Retrieved from http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2016_157.pdf 215; Johnston, I and Bruton, F. (2013, July 17). North Korean Ship Carrying Hidden "Missile Equipment" Detained after Leaving Cuba. *NBC News*. Retrieved from http://www.nbcnews.com/news/other/north-korean-ship-carrying-hidden-missile-equipment-detained-after-leaving-f6C10647045.
31. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
32. *Windward*. Retrieved from windward.eu.
33. Griffiths, H. Jenks, M. (2002, January). Maritime Transport and Destabilizing Commodity Flows. *SIPRI*. Retrieved from books.sipri.org/files/PP/SIPRIPP32.pdf.
34. (2016). Current Registries Listed as FOCs. *ITF Seafarers*. Retrieved from http://www.itfseafarers.org/foc-registries.cfm.
35. (2012). Companies Ordinance: Part 10 – Division 1 – Subdivision 1. *The Government of the Hong Kong Special Administrative Region of the People's Republic of China*. Retrieved from http://www.cr.gov.hk/en/companies_ordinance/docs/part10-e.pdf.
36. (2012, February 14). Hong Kong Company Incorporation. *S.J. Grand Financial and Tax Advisory*. Retrieved from http://www.sjgrand.cn/hong-kong-company-incorporation.
37. Ibid.
38. (2006, November 9). Guidance. *Financial Crimes Enforcement Network, U.S. Department of the Treasury*. Retrieved from https://www.fincen.gov/sites/default/files/shared/AdvisoryOnShells_FINAL.pdf.
39. (n.d.). Chartered Secretaries. *The Hong Kong Institute of Chartered Secretarie*s. Retrieved from https://www.hkics.org.hk/index.php?_room=4.
40. (n.d.). Member List. *The Hong Kong Institute of Chartered Secretaries*. Retrieved from https://www.hkics.org.hk/index.php?_room=member&_action=list.
41. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
42. (2015, February 23). Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009). *United Nations Security Council*. Retrieved from http://www.securitycouncilreport.org/

atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2015_131.pdf 68.
43. (2013, January 24). Treasury Sanctions Company and Individuals Linked to North Korean Weapons Of Mass Destruction Program. *U.S. Department of the Treasury*. Retrieved from https://www.treasury.gov/press-center/press-releases/Pages/tg1828.aspx.
44. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
45. Giffiths, H., Dermody, L. (2014, May 6). Loopholes in UN Sanctions against North Korea. *38 North*. Retrieved from http://38north.org/2014/05/griffithdermod050614/print/.
46. *Equasis*. Retrieved from http://www.equasis.org/.
47. *Hong Kong Business Registry Filin*g, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
48. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
49. (n.d.). *Lianoning Hongxiang Group*. Retrieved from Lnhongxiang.com/cn; *鸿祥集团徒步穿越活动*. *Liaoning Hongxiang Group*. http://www.lnhongxiang.com/cn/qyhd_info.asp?id=90.
50. (n.d.). Contact Us. *Liaoning Hongxiang Industrial Group*. Retrieved from http://lnhongxiang.com/cn/lxwm.asp.
51. For these companies, the author has provided English translations of the Chinese characters. These may not be the English names of these companies.
52. Ibid.
53. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
54. (n.d.). *Liaoning Hongxiang Industrial Group*. Retrieved from http://lnhongxiang.com/cn.
55. *Panjiva*. Retrieved from https://panjiva.com.
56. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
57. *Ministry of Foreign Affairs of the People's Republic of China*. Retrieved from http://webcache.googleusercontent.com/search?q=cache:x_qscenwjJQJ:www.fmprc.gov.cn/web/fw_673051/lbfw_673061/lsgmd_673079/t576269.shtml+&cd=2&hl=en&ct=clnk&gl=us.
58. (2015, September 25). 中朝开通首条散集杂货班轮航线. *Xinhuanet*. Retrieved from http://news.xinhuanet.com/fortune/2015-09/25/c_1116680918.htm.
59. Ibid.
60. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
61. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
62. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
63. (n.d.). Dandong Hongxiang Industrial Development Co.,Ltd. *Panjiva*. Retrieved from https://panjiva.com/Dandong-Hongxiang-Industrial-Development-Co-Ltd/15682597.
64. (n.d.). Dandong Hongxiang Industrial Development Co.,Ltd. *Panjiva*. Retrieved from https://panjiva.com/Dandong-Hongxiang-Industrial-Development-Co-Ltd/15505724?q=%E2%80%A2%09Dandong+Hongxiang+Industrial+Development.
65. Silberstein, B. K. (2016, February 10). How Bad Is the Kaesong Shutdown for the North Korean Economy? *North Korean Economy Watch*. Retrieved from http://www.nkeconwatch.com/category/economic-reform/special-economic-zones/kaesong-industrial-park/.
66. (2013, February 13). What Did N. Korea's Nuclear Program Cost? *The Chosunilbo*. Retrieved from http://english.chosun.com/site/data/html_dir/2013/02/13/2013021301335.html.
67. *Panjiva*. Retrieved from https://panjiva.com.
68. Ibid.
69. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
70. Moore, M. (2013, April 13). China Breaking UN Sanctions to Support North Korea. *The Telegraph*. Retrieved from http://www.telegraph.co.uk/news/worldnews/asia/northkorea/9991907/China-breaking-UN-sanctions-to-support-North-Korea.html.
71. Gance, P. (2013, June 27). U.S. Sanctions North Korea Bank as It Targets Weapons Program. *Reuters*. Retrieved from http://www.reuters.com/article/us-korea-north-sanctions-idUSBRE95Q12U20130627.
72. (2013, March 11). Treasury Sanctions Bank and Official Linked to North Korean Weapons of Mass Destruction Programs. *U.S. Department of the Treasury*. Retrieved from https://www.treasury.gov/press-center/press-releases/Pages/jl1876.aspx.
73. (n.d.). 鸿祥集团徒步穿越活动. *Liaoning Hongxiang Industrial Group*. Retrieved from http://www.lnhongxiang.com/cn/qyhd_info.asp?id=90.
74. Ferrie, J. (2014, July 23). Burmese Tycoon Tay Za Under Scrutiny. *Forbes*. Retrieved from http://www.*forbes*.com/sites/forbesasia/2014/07/23/burmese-tycoon-tay-za-under-scrutiny/#17db01e6457e.
75. (2007, October 19). Recent OFAC Actions. *U.S. Department of the Treasury Resource Center*. Retrieved from https://www.treasury.gov/resource-center/sanctions/OFAC-Enforcement/pages/

20071019a.aspx.
76. (2012, November 16). Publication of Burma General Licenses and Burma Designations. *U.S. Department of the Treasury Resource Center*. Retrieved from https://www.treasury.gov/resource-center/sanctions/OFAC-Enforcement/Pages/20121116.aspx.
77. (2016). Sanctions Search List. Office of Foreign Assets Control, U.S. Department of the Treasury. Retrieved from https://sanctionssearch.ofac.treas.gov.
78. (2008, February 5). Treasury Action Targets Financial Network of Burmese Tycoon and Regime Henchman Tay Za. *U.S. Department of the Treasury*. Retrieved from http://www.treasury.gov/press-center/press-releases/Pages/hp807.aspx.
79. Ibid.
80. Burmese Tycoon Tay Za Under Scrutiny. *Forbes*. Retrieved from http://www.forbes.com/sites/forbesasia/2014/07/23/burmese-tycoon-tay-za-under-scrutiny.
81. Szep, J., Marshall A. R. C. (2012, April 13). Special Report: An Image Makeover for Myanmar Inc. *Reuters*. Retrieved from http://www.reuters.com/article/2012/04/13/us-myanmar-cronies-image-idUSBRE83B0YU20120413.
82. U Pyae Phyo Ta Za (12/KAMAYA(NAING)054561) is listed in the DICA Burmese business registry as a director for Mingalardon Cargo Services, and Mingalardon Cargo Services Public Holding. The former is located at No. 5, Pyay Road, Hlaing, Yangon, where many of Tay Za's businesses are located. Additionally, Mingalardon Cargo Services lists Chan Nywin Zaw, the CEO of Elite Tech, a company connected to the Htoo Group, as its director. Conversely, Mingalardon Cargo Services Public Holding lists Tay Za himself as a board director.
83. Ball, D., Thorthon, P. (2009, August 1) Burma's Nuclear Secrets. Sydney Morning Herald. Retrieved from http://www.smh.com.au/world/burmax2019s-nuclear-secrets-20090731-e4fv.html.
84. Ferrie, J. (2014, July 23). Burmese Tycoon Tay Za Under Scrutiny. *Forbes*. Retrieved from http://www.forbes.com/sites/forbesasia/2014/07/23/burmese-tycoon-tay-za-under-scrutiny/#17db01e6457e.
85. Ibid.
86. (2016). Sanctions Search List. Office of Foreign Assets Control, U.S. Department of the Treasury. Retrieved from https://sanctionssearch.ofac.treas.gov/Details.aspx?id=1485.
87. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
88. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
89. Ibid.

90. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
91. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
92. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk
93. *Equasis*. Retrieved from http://www.equasis.org/.
94. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
95. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
96. (2008, December 18). Korea National Insurance Company v Allianz. *CMS Law-Now*. Retrieved from http://www.cms-lawnow.com/ealerts/2008/12/korea-national-insurance-company-v-allianz?cc_lang=en.
97. (2008, December 19). Lessons in Insurance. *North Korean Economy Watch*. Retrieved from http://www.nkeconwatch.com/2008/12/19/lessons-in-insurance/.
98. Jung, A., Lipes, A. (2008). Fraud Linked to Flood Photo. *Radio Free Asia*. Retrieved from http://www.rfa.org/english/news/korea/photo-08012011173718.html.
99. (2015, July 3). European Commission Designates N. Korean Insurance Company, Individuals. *NK News*. Retrieved from https://www.nknews.org/2015/07/european-commission-sanctions-hit-n-korean-insurance-company-individuals/.
100. (2015, July 3). COMMISSION IMPLEMENTING REGULATION (EU) 2015/1062 of 2 July 2015. *Official Journal of the European Union*. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2015_174_R_0004&from=EN.
101. Jin, K. K. (2011, September/October). The Defector's Tale: Inside North Korea's Secret Economy. *World Affairs Journal*. Retrieved from http://www.worldaffairsjournal.org/article/defector%E2%80%99s-tale-inside-north-korea%E2%80%99s-secret-economy.
102. Mong, A. (2014, May 13). Why North Korea's Kim Jong Un Isn't as Powerful as Kim Jong Il. *NBC News*. Retrieved from http://www.nbcnews.com/news/world/why-north-koreas-kim-jong-un-isnt-powerful-kim-jong-n103926.
103. Taylor, A. (2013, December 12). NORTH KOREA: Kim Jong-un's Uncle Has Been Executed. *Business Insider*. Retrieved from http://www.businessinsider.com/north-korea-jang-song-thaek-executed-2013-12.
104. (2008). Jang Song Taek Rumored to be in Control. *North Korean Economy Watch*. Retrieved

from http://www.nkeconwatch.com/2008/11/09/jang-song-taek-ruored-to-be-in-control/.
105. (2016). Commerce Control List: Supplement No. 1 to Part 774. *Board of Industry and Security*. Retrieved from https://webcache.googleusercontent.com/search?q=cache:Gg0hwSgiMHQJ:https://www.bis.doc.gov/index.php/forms-documents/doc_download/989-ccl1+&cd=1&hl=en&ct=clnk&gl=us.
106. (2008, September 24). *Asian Metal*. Retrieved from http://www.asianmetal.com/trade/getIntTradeInfoEn.am?bargainingId=17174.
107. *Asian Metal*. Retrieved from http://www.asianmetal.com/trade/getIntTradeInfoEn.am?bargainingId=13773.
108. *Panjiva*. Retrieved from https://panjiva.com.
109. (n.d.) Products from Shenyang Hongyang Fine Ceramic Co. Ltd. *Global Sources*. Retrieved from https://webcache.googleusercontent.com/search?q=cache:91Tc3YCtZacJ:www.globalsources.com/si/AS.
110. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
111. (2008, July 30). FOLLOWING UP WITH TAIWAN ON TRANS MERITS (S). *WikiLeaks*. Retrieved from https://wikileaks.org/plusd/cables/08STATE82164_a.html.
112. Ammonium Paratungstate (APT) Production. *China Tungsten Online (Xiamen) Manu. & Sales Corp*. Retrieved from http://ammonium-paratungstate.com/english/manufacture.html.
113. Hahma, A. (2013, August 27). Missiles Having a Pyrotechnic Charge. *Google Patents*. Retrieved from http://www.google.com/patents/US8518196.
114. (n.d.) PART 110—EXPORT AND IMPORT OF NUCLEAR EQUIPMENT AND MATERIAL. *United States Nuclear Regulatory Commission*. Retrieved from http://www.nrc.gov/reading-rm/doc-collections/cfr/part110/full-text.html.
115. Neate, R. (2013, April 21). Glencore Traded with Iranian Supplier to Nuclear Programme. *The Guardian*. Retrieved from http://www.theguardian.com/business/2013/apr/21/glencore-trade-iran-supplier-nuclear.
116. Obama, B. (2016, March 15). Executive Order -- Blocking Property of the Government of North Korea and the Workers' Party of Korea, and Prohibiting Certain Transactions with Respect to North Korea. *The White House*. Retrieved from https://www.whitehouse.gov/the-press-office/2016/03/16/executive-order-blocking-property-government-north-korea-and-workers.
117. (n.d.). Contact Us. *Liaoning Hongxiang Industrial Group*. Retrieved from http://lnhongxiang.com/cn/lxwm.asp.
118. Ripley, W. (2015, January 7). North Korean Defector: 'Bureau 121' Hackers Operating in China. *CNN*. Retrieved from http://edition.cnn.com/2015/01/06/asia/north-korea-hackers-shenyang/.
119. Daly, M. (2014, December 20). Inside the 'Surprisingly Great' North Korean Hacker Hotel. *The Daily Beast*. Retrieved from http://www.thedailybeast.com/articles/2014/12/20/inside-the-surprisingly-great-north-korean-hacker-hotel.html.
120. Ripley, W. (2015, January 7). North Korean Defector: 'Bureau 121' Hackers Operating in China. *CNN*. Retrieved from http://edition.cnn.com/2015/01/06/asia/north-korea-hackers-shenyang/.
121. Park, J. M. (2014, December 5). In North Korea, Hackers Are Handpicked, Pampered Elite. *Reuters*. Retrieved from http://www.reuters.com/article/us-sony-cybersecurity-northkorea-idUSKCN0JJ08B20141205.
122. Cloherty, J. (2014, December 17). Sony Hack Believed to Be Routed Through Infected Computers Overseas. *ABC News*. Retrieved from http://abcnews.go.com/Politics/sony-hack-believed-routed-infected-computers-overseas/story?id=27667840.
123. For these companies, the author has provided English translations of the Chinese characters. These may not be the English names of these companies.
124. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
125. Hussey, M. (2016, January 28). There Are just 7,000 Web Users in North Korea. *The Next Web*. Retrieved from http://thenextweb.com/asia/2016/01/28/there-are-just-7000-web-users-in-north-korea/#gref.
126. Kim, T. H. (2014, December 23). Look at How Bizarre North Korea's 'Internet' Is. *Business Insider*. Retrieved from http://www.businessinsider.com/a-look-at-north-koreas-tightly-controlled-internet-services-2014-12.
127. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
128. (n.d.). Whois Record for Silibank.com. *Domain Tools*. Retrieved from http://whois.domaintools.com/silibank.com.
129. Lintner, B. (2007, April 24). North Korea's IT Revolution. *North Korean Economy Watch*. Retrieved from http://www.nkeconwatch.com/category/organizaitons/silibank/.
130. Lemon, S. (2001, November 7). North Korea Opens Doors to E-mail. *CNN*. Retrieved from http://edition.cnn.com/2001/TECH/internet/11/07/north.korea.email.idg/index.html.
131. (n.d.). Who is Record for Silibank.com. *Domain Tools*. Retrieved from http://whois.domaintools.com/silibank.com.
132. For these companies, the author has provided English translations of the Chinese characters. These may not be the English names of these companies.

133. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
134. (2016, April 28). CONSOLIDATED LIST OF FINANCIAL SANCTIONS TARGETS IN THE UK. *United Kingdom*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/441921/northkorea.pdf.
135. (2016, February 24). Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009). *United Nations Security Council*. Retrieved from http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2016_157.pdf 173 / 38.
136. For these companies, the author has provided English translations of the Chinese characters. These may not be the English names of these companies.
137. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved from http://gsxt.saic.gov.cn/.
138. Ibid.
139. *Liaoning Darong Information Technology Co. Ltd*. Retrieved from http://www.hopegis.com/.
140. *Chinese Business Registry Filing*, document held by author available upon request. Retrieved fromhttp://gsxt.saic.gov.cn/.
141. Ibid.
142. *Liaoning Darong Information Technology Co. Ltd*. Retrieved from http://www.hopegis.com/.
143. *Windward*. Retrieved from windward.eu.
144. *Panjiva*. Retrieved from https://panjiva.com.
145. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk; *Equasis*. Retrieved from http://www.equasis.org/.
146. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
147. *Hong Kong Business Registry Filing*, document held by author available upon request. Retrieved from http://www.icris.cr.gov.hk.
148. Ah, S. S. (2014, April 3). On the Business of Exporting Coal. *North Korean Economy Watch*. Retrieved from http://www.nkeconwatch.com/2014/04/03/on-the-business-of-exporting-coal/.
149. (N.D.) Songnim North Korea. *Encyclopedia Britannica*. Retrieved from https://www.britannica.com/place/Songnim.
150. Simoes, A. North Korea. *The Observatory of Economic Complexity*. Retrieved from http://atlas.media.mit.edu/en/profile/country/prk/#Exports.
151. (n.d.). North Korea Purge Sparked by Mineral Disputes: Seoul Official. *Jakarta Globe*. Retrieved from http://jakartaglobe.beritasatu.com/international/north-korea-purge-sparked-by-mineral-disputes-seoul-official/.
152. Demetriou, D. (2013, December 23). Kim Jong-Un 'Very Drunk' When He Ordered Execution of Uncle's Two Aides. *The Telegraph*. Retrieved from http://www.telegraph.co.uk/news/worldnews/asia/northkorea/10535033/Kim-Jong-un-very-drunk-when-he-ordered-execution-of-uncles-two-aides.html.
153. (2015, July 23). Treasury Sanctions Supporters of North Korea's Ocean Maritime Management Company and Updates Sanctions List. *U.S. Department of the Treasury*. Retrieved from https://www.treasury.gov/press-center/press-releases/Pages/jl0130.aspx.
154. Berger, A. (2015, June 22). North Korea's Friends in Singapore Running Flags of Convenience. *38 North*. Retrieved from http://38north.org/2015/06/aberger062215/.
155. Barron, P., Kimsong, K. (2003, April 11). New Nat'l Shipping Registry Sets Up Office. *The Cambodia Daily*. Retrieved from https://www.cambodiadaily.com/archives/new-natl-shipping-registry-sets-up-office-26019/.
156. (n.d.). Deputy Registrars. *International Ship Registry of Cambodia*. Retrieved from http://old.isrocam.com/netw/netw01.php.
157. Ibid.
158. (2003, February 28). Letter of Appointment. *Jack Intermaritime Group*. Retrieved from http://jackintermaritimegroup.com/doce/gsjj_zheng02d.htm.
159. *Equasis*. Retrieved from http://www.equasis.org/.
160. For these companies, the author has provided English translations of the Chinese characters. These may not be the English names of these companies.
161. (n.d.). 大连杰克船舶管理有限公司. *1024sj*. Retrieved from http://www.1024sj.com/com/qiye.aspx?id=16041051.
162. (2015, November 16). Sanctioned Lists and Red Flags. *Singapore Customs*. Retrieved from http://www.customs.gov.sg/businesses/strategic-goods-control/sanctioned-lists-and-red-flags.
163. Lague, D., Greenlees, D. (2007, January 18). Squeeze on Banco Delta Asia Hit North Korea Where it Hurt –Asia-Pacific-International Herald Tribune. *The New York Times*. Retrieved from http://www.nytimes.com/2007/01/18/world/asia/18iht-north.4255039.html?pagewanted=1&%2360;!--Un..&_r=1.
164. Ibid.
165. (2016). PSC Database. *Asia-Pacific PSC Tokyo MoU*. Retrieved from http://www.tokyo-mou.org/inspections_detentions/psc_database.php.

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