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Introduction

Is there a nuclear proliferation nexus between Iran and the Democratic People's Republic of Korea (DPRK)? Pyongyang tested a nuclear weapon in early January – its fourth such test in a decade and its third since President Barack Obama took office.¹ A top Iranian official overseeing Tehran's nuclear program was present during the last test, in 2013,² and if experience is any guide, the Islamic Republic may have sent representatives to this year's as well.³ And just as North Korea unilaterally withdrew over a decade ago from the Nuclear Non-Proliferation Treaty and proceeded to conduct nuclear tests,⁴ an Iranian repeat of such a "breakout" scenario remains a disconcerting possibility.

Despite nearly two decades of Iranian denial and deception pointing to an ultimate objective of obtaining nuclear weapons, the International Atomic Energy Agency (IAEA) gave its go-ahead for the implementation of the nuclear agreement signed by Tehran and the P5+1 (the United States, United Kingdom, Russia, China, France, and Germany) in July 2015.⁵ This approval came despite the fact that Iran had not addressed many

of the most troublesome aspects of its nuclear program – the so-called possible military dimensions.⁶

The U.S. government states that there is no proof attesting to Iran's nuclear cooperation with the DPRK. An April 2014 report by the Congressional Research Service, for example, found "no evidence that Iran and North Korea have engaged in nuclear-related trade or cooperation with each other," while conceding that "ballistic missile technology cooperation between the two is significant and meaningful."⁷

That report, however, intimates that the sources on which it was based might have been insufficient. It noted, for example, that the number of unclassified reports to Congress on nuclear-weapons issues had decreased considerably following the Intelligence Authorization Act for Fiscal Year 2013, which repealed requirements for the intelligence community to provide an unclassified annual report to Congress on the "Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions."⁸

1. David Nakamura, "North Korea got less attention as Obama focused on Iran nuke deal," *The Washington Post*, January 6, 2016. (www.washingtonpost.com/politics/north-korea-got-less-attention-as-obama-focused-on-iran-nuke-deal/2016/01/06/5f3544da-b497-11e5-9388-466021d971de_story.html)

2. Uzi Mahnaimi, Michael Sheridan, and Shota Ushio, "Iran steps deep into Kim's nuclear huddle," *The Sunday Times* (UK), February 17, 2013. (www.thesundaytimes.co.uk/sto/news/world_news/Middle_East/article1215608.ece)

3. "In North Korean nuclear test, an echo of past provocations," *CBS News*, January 7, 2016. (www.cbsnews.com/news/in-north-korea-nuclear-test-an-echo-of-past-provocations/)

4. "Chronology of U.S.-North Korean Nuclear and Missile Diplomacy," *Arms Control Association*, January 2016. (www.armscontrol.org/factsheets/dprkchron)

5. International Atomic Energy Agency, "Verification and Monitoring in the Islamic Republic of Iran in light of United Nations Security Council Resolution 2231," January 16, 2016. (www.iaea.org/sites/default/files/gov-inf-2016-1.pdf)

6. International Atomic Energy Agency, "Final Assessment on Past and Present Outstanding Issues regarding Iran's Nuclear Programme," December 2, 2015. (www.iaea.org/sites/default/files/gov-2015-68.pdf); David Albright, Andrea Stricker, and Serena Kelleher-Vergantini, "Analysis of the IAEA's Report on the Possible Military Dimensions of Iran's Nuclear Program," *Institute for Science and International Security*, December 8, 2015. (www.isisnucleariran.org/assets/pdf/ISIS_Analysis_of_the_IAEA_PMD_Report_December_8_2015_Final.pdf); Olli Heinonen, "Next Steps in the Implementation of the JCPOA," *FDD Research*, December 8, 2015. (www.defenddemocracy.org/media-hit/next-steps-in-the-implementation-of-the-jcpoa/); "The Possible Military Dimensions of Iran's Nuclear Program," *Iran Task Force*, December 2015. (http://taskforceoniran.org/pdf/The_PMDs_of_Iran%E2%80%99s_Nuclear_Program.pdf)

7. Paul Kerr, Steven Hildreth, and Mary Beth Nikitin, "Iran-North Korea-Syria Ballistic Missile and Nuclear Cooperation," *Congressional Research Service*, May 11, 2015, page 3. (www.fas.org/sgp/crs/nuke/R43480.pdf)

8. Claudia Rosett, "How Iran and North Korea Became Cyber-Terror Buddies," *The Tower*, January 2, 2015. (www.thetower.org/article/how-iran-and-north-korea-became-cyber-terror-buddies/)

There is significant reason to believe Iran-North Korea nuclear cooperation is closer than commonly recognized. But with proof elusive, we have more questions than answers. This report endeavors to pose the most important among them.

Questions Raised by Rafsanjani's Memoirs

Ali Akbar Hashemi Rafsanjani is widely considered the father of Iran's nuclear program. His memoirs are based on journal entries from 1979 onward, and published on an annual basis at a twenty-year delay (entries from 1980, for example, were published in 2000).⁹ The memoirs provide detailed information into affairs of the state in the 1980s and early 1990s – the formative period for Iran-North Korea relations. Rafsanjani's close relations with the late Supreme Leader Ruhollah Khomeini, and his position as deputy commander-in-chief of the armed forces,¹⁰ helped make him the key decision-maker on arms procurements from North Korea. By the end of the Iran-Iraq War, however, his journal entries on North Korea had become more opaque – a change that may reflect an emerging nuclear nexus between Tehran and Pyongyang.

On February 29, 1989, while receiving DPRK Vice Minister of Defense Kim Kwang-chin, Rafsanjani writes of hearing complaints over Tehran's cancellation of arms-procurement contracts signed during the war with Iraq.¹¹ The North Koreans, he writes, claim

they had already purchased the raw material for producing missiles for Iran, and now faced a financial loss.¹² Rafsanjani stresses Iran's changed needs after the end of the Iran-Iraq War, and proposes that his country "import some of the goods," but asks for an unspecified "technology transfer" instead of the rest of the commissioned ballistic missiles.¹³

In his June 13, 1991 entry, Rafsanjani refers to his discussion with Hassan Firouzabadi, chief of staff of the Armed Forces, and an unidentified "Mr. Mortezaei" concerning "special and sensitive issues" related to North Korea.¹⁴ Later that month, on June 26, Rafsanjani further discusses the same issue with Firouzabadi, Defense Minister Akbar Torkan, unnamed Islamic Revolutionary Guard Corps commanders, and Hassan Rouhani, then secretary of the Supreme National Security Council and now president of the Islamic Republic. This time, the journal vaguely mentions discussion of "business transactions with North Korea."¹⁵

Rafsanjani's August 4, 1991 entry sheds some light on the previous, cryptic journal entries. Receiving DPRK Deputy Prime Minister Kim Dal-hyon, Rafsanjani expresses interest in importing a "special commodity" in return for Iran's oil shipments to the DPRK.¹⁶ Rafsanjani does not explain the nature of the commodity, but on November 9, 1991, he receives Dr. Majid Abbaspour, technical adviser to the president,

9. "دفتر خاطرات محرمات آیت الله" (Secret Memoir of the Ayatollah)," *Mehrnameh* (Iran), No. 14, July/August 2011. (www.mehrnameh.ir/article/)

10. For the order from Ayatollah Khomeini confirming Rafsanjani's appointment to this position, see "انتصاب جانشین" (Appointment of the Deputy Commander in Chief)," *Imam Khomeini Website* (Iran), accessed January 30, 2015. (www.imam-khomeini.ir/fa/)

11. Ali-Akbar Hashemi Rafsanjani, edited by Ali-Reza Hashemi, *پایان دفاع آغاز بازسازی*, کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۶۷ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, ca. 2011), page 531.

12. Ali-Akbar Hashemi Rafsanjani, edited by Ali-Reza Hashemi, *پایان دفاع آغاز بازسازی*, کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۶۷ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, ca. 2011), page 531.

13. Ali-Akbar Hashemi Rafsanjani, edited by Ali-Reza Hashemi, *پایان دفاع آغاز بازسازی*, کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۶۷ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, ca. 2011), page 531.

14. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, *سازندگی و شکوفایی*, کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 177.

15. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, *سازندگی و شکوفایی*, کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 199.

16. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, *سازندگی و شکوفایی*, کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 254.

who reports on the “progress of the chemical, biological, radiological and nuclear industries and offered consultation concerning his [upcoming] visit to North Korea.”¹⁷ Rafsanjani concludes the entry noting that he insisted upon being provided with unspecified “technical knowhow.”¹⁸

On January 30, 1992, Rafsanjani received Intelligence Minister Ali Fallahian and Mostafa Pour-Mohammadi, the Intelligence Ministry’s director of foreign espionage, to discuss “procurement channels for sensitive commodities.”¹⁹ The journal’s February 8, 1992 entry also uses the term “special commodity,” and reads: “The North Koreans want oil, but have nothing to give in return but the special commodity. We too are inclined to solve their problem.”²⁰

Rafsanjani then orders Defense Minister Torkan to “immediately arrange a meeting” and organize a taskforce for analyzing the risks and benefits involved in such an enterprise.²¹ The taskforce ultimately recommends that Rafsanjani accept “the risk of procuring the commodities in question,” but the latter urges the intelligence minister “to act carefully.”²²

In his March 9, 1992 entry, Rafsanjani gloats over the U.S. Navy having tracked a North Korean ship bound for Syria while missing two DPRK vessels destined for

Iran.²³ Two days later, when the ships are unloaded in the Iranian ports of Bandar Abbas and Chabahar, Rafsanjani exults, “The Americans were really embarrassed.”²⁴

Rafsanjani never openly admits involvement in the procurement of nuclear technology and components from North Korea. However, his reported desire to be viewed as the father of Iran’s nuclear bomb may have contributed to his disclosing secrets of state that illuminate part of the larger puzzle over Iran-North Korea nuclear cooperation.

Key questions related to Rafsanjani’s memoirs include:

- What technology did Rafsanjani seek to import from North Korea in his February 29, 1989 conversation with the North Korean delegation, and in return for Iran’s oil exports in his August 4, 1991 conversation?
- What “technical knowhow” did Rafsanjani aim to acquire from North Korea in his November 9, 1991 conversation with Abbaspour, the technical adviser?
- Why did Rafsanjani call upon Fallahian and Pour-Mohammadi of the Intelligence Ministry to discuss “procurement channels for sensitive commodities,” and what are the commodities in question?
- What cargo did North Korean ships mentioned in his March 9, 1992 entry bring to Iran?

Present-Day Nuclear Nexus

Fast forward to today, and the Iran-North Korea relationship is characterized by three overriding patterns. First, both countries continue to rely

17. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, سازندگی و شکوفایی، کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 408.

18. Ibid.

19. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, سازندگی و شکوفایی، کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 550.

20. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, سازندگی و شکوفایی، کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 562.

21. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, سازندگی و شکوفایی، کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 550.

22. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, سازندگی و شکوفایی، کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 554.

23. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, سازندگی و شکوفایی، کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 620.

24. Ali-Akbar Hashemi Rafsanjani, edited Emad Hashemi, سازندگی و شکوفایی، کارنامه و خاطرات هاشمی رفسنجانی سال ۱۳۷۰ (Tehran: Daftar-e Nashr-e Maaref-e Enqelab, 2014), page 621.

on external sources for materials, equipment, and technologies that they cannot produce indigenously.²⁵ Second, each has built a global capacity that allows it to improve on each step in the procurement chain.²⁶ Third, despite mutual distrust and little in common aside from a shared disdain for the Western-led world order, they have learned how to work together.²⁷

Intelligence Community and Department of Defense assessments point to past flows of missiles and related technology between North Korea and Iran since the mid-1980s, but senior U.S. officials now state that Iran's missile technology has progressed sufficiently that it no longer needs to rely on North Korean assistance.²⁸

25. On Iran, see Michael Elleman, "Iran's Ballistic Missile Program," *The United States Institute of Peace*, August 2015. (iranprimer.usip.org/resource/irans-ballistic-missile-program); On North Korea, see David Albright and Olli Heinonen, "In Response to Recent Questionable Claims about North Korea's Indigenous Production of Centrifuges," *Harvard Belfer Center for Science and International Affairs*, October 18, 2013. (belfercenter.ksg.harvard.edu/publication/23514/in_response_to_recent_questionable_claims_about_north_koreas_indigenous_production_of_centrifuges.html)

26. Daniel Salisbury, "How The Private Sector Can Do More To Prevent Illicit Trade," *Arms Control Today*, July 2, 2013. (www.armscontrol.org/act/2013_0708/How-the-Private-Sector-Can-Do-More-to-Prevent-Illicit-Trade)

27. For baseline assessments of the status of the nuclear relationship between Iran and North Korea, see Paul Kerr, Mary Beth Nikitin, and Steven Hildreth, "Iran-North Korea-Syria Ballistic Missile and Nuclear Cooperation," *Congressional Research Service*, May 11, 2015. (www.fas.org/sgp/crs/nuke/R43480.pdf); For a detailed assessment of the limits of the Iran-DPRK relationship, see Jeffrey Lewis, "Limited Partnership," *Foreign Policy*, February 22, 2013. (www.foreignpolicy.com/articles/2013/02/22/limited_partnership)

28. James R. Clapper, Jr., "Current and Future Worldwide Threats to the National Security of the United States," *Testimony before the Senate Committee on Armed Services*, February 11, 2014. (www.gpo.gov/fdsys/pkg/CHRG-113shrg93412/html/CHRG-113shrg93412.htm); James Woolsey, "Breaking the Iran, North Korea and Syria Nexus," *Joint hearing before House Committee on Foreign Affairs Subcommittees on Middle East and North Africa, Asia and the Pacific, and Terrorism, Nonproliferation, and Trade*, April 11, 2013 (docs.house.gov/meetings/FA/FA13/20130411/100636/HHRG-113-FA13-Wstate-WoolseyJ-20130411.pdf); Paul Kerr, Mary Beth Nikitin, and Steven Hildreth, "Iran-North Korea-Syria

Media reports have revealed trips made by Iranian nuclear scientists and government officials to North Korea to sign science and technology agreements or to witness nuclear tests,²⁹ but intelligence assessments see no ongoing nuclear weapons-related cooperation between the two countries. U.S. officials assert the need to remain alert over the possibility, but point to the lack of open-source or classified evidence of such cooperation.³⁰ The following are the key questions for U.S. policy makers:

- Does Iran rely on North Korea for help in specialized-weapons research and development (R&D) such as warhead miniaturization?
- Has North Korea helped the Islamic Republic circumvent nuclear-related sanctions to obtain components for nuclear development?
- Do the two countries work together to acquire sensitive export-controlled materials they cannot produce indigenously (such as special oils, pumps, and cooling equipment)?
- The Israeli air force destroyed a North Korea-built nuclear reactor in Syria in 2007. The close ties between Iran and Syria are well documented. To

Ballistic Missile and Nuclear Cooperation," *Congressional Research Service*, May 11, 2015. (www.fas.org/sgp/crs/nuke/R43480.pdf)

29. Choe Sang-Hun, "North Korean Missile Said to Have Military Purpose," *The New York Times*, December 23, 2012. (www.nytimes.com/2012/12/24/world/asia/north-korean-rocket-had-military-purpose-seoul-says.html?_r=0); Con Coughlin, "Iran 'is seeking N Korea's nuclear expertise'," *The Daily Telegraph* (UK), April 17, 2007. (www.telegraph.co.uk/news/worldnews/1548883/Iran-is-seeking-N-Koreas-nuclear-expertise.html); "Source: Hundreds of NK nuclear and missile experts working in Iran," *The Korea Times* (South Korea), November 13, 2011. (www.koreatimes.co.kr/www/news/nation/2011/11/113_98613.html)

30. Paul Kerr, Mary Beth Nikitin, and Steven Hildreth, "Iran-North Korea-Syria Ballistic Missile and Nuclear Cooperation," *Congressional Research Service*, May 11, 2015. (www.fas.org/sgp/crs/nuke/R43480.pdf)

what extent are North Korea's Syrian ties a potential template for Pyongyang's relationship with Iran?

- China has long been suspected of serving as a central trading hub for some of the most critical equipment, technologies, and expertise related to the nuclear-weapons trade.³¹ To what extent does U.S. strategy to monitor and counter potential Iran-DPRK illicit nuclear cooperation involve greater cooperation from Beijing?

Commercial Indicators of a Nuclear Nexus

Analysts have suggested the possibility that Iran is outsourcing aspects of its nuclear weapons program to the DPRK,³² but tend to cite ballistic missile cooperation to make that case. In 1987, for example, the Islamic Republic received some 100 Scud-B missiles from North Korea as part of a deal in which the former agreed to finance the latter's longer-range missile program in exchange for missile technology and the option to buy the finished projectiles.³³

Hard evidence of active nuclear weapons development

and production is lacking.³⁴ However, the activities of the Shahid Hemmat Industrial Group (SHIG), for example, suggest a certain depth to DPRK-Iran ballistic missile collaboration. On April 6, 2000, the U.S. Treasury issued sanctions through Executive Order 12924 against SHIG for missile-technology proliferation involving items controlled by the Missile Technology Control Regime (MTCR).³⁵ This was followed in 2003 by sanctions pursuant to Executive Order 12938, which penalized Iran for acquiring MTCR-controlled missile technology from China's North Industries Corporation. This was followed two years later by additional sanctions pursuant to Executive Order 13382, which added several of the most significant Iranian and North Korean entities (such as the Atomic Energy Organization of Iran, Shahid Hemmat Industrial Group, Korea Mining Development Trading Corporation, and Tanchon Commercial Bank) to Treasury's list of banned proliferation entities.³⁶

34. James R. Clapper Jr., "Statement for the Record: Worldwide Threat Assessment of the US Intelligence Community," *Testimony before the Senate Select Intelligence Committee*, January 29, 2014. (www.dni.gov/files/documents/Intelligence%20Reports/2014%20WWTA%20%20SFR_SSCI_29_Jan.pdf)

35. U.S. Department of State, Bureau of Nonproliferation, "Imposition of Missile Proliferation Sanctions Against Entities in North Korea and Iran," April 7, 2000. (www.gpo.gov/fdsys/pkg/FR-2000-04-14/html/00-9349.htm) (accessed via the Government Printing Office)

36. In 2003, the United States sanctioned the Chinese conglomerate Norinco for supplying missile technology to SHIG. In February 2009, the U.S. Treasury Department sanctioned a North Korean company for its involvement with SHIG as well. In March 2009, SHIG missile experts reportedly visited North Korea to help prepare for a rocket test launch. Donald Kirk, "Why Iranian engineers attended North Korea's failed rocket launch," *The Christian Science Monitor*, April 18, 2012. (www.csmonitor.com/World/Asia-Pacific/2012/0418/Why-Iranian-engineers-attended-North-Korea-s-failed-rocket-launch); Jung Sung-ki and Michael Ha, "Obama Imposes Sanctions on NK Firms," *The Korea Times* (South Korea), February 4, 2009. (www.koreatimes.co.kr/www/news/nation/2015/10/116_38965.html); Kenneth Katzman, "Iran: U.S. Concerns and Policy Responses," *Congressional*

31. David Albright, Paul Brannan, and Andrea Scheel Stricker, "Detecting and Disrupting Illicit Nuclear Trade after A.Q. Khan," *The Washington Quarterly*, April 2010. (www.csis.org/files/attachments/130828_Detecting%20and%20Disrupting%20Nuclear%20Trade.pdf)

32. Claudia Rosett, "Iran Could Outsource Its Nuclear Weapons Program to North Korea," *The Wall Street Journal*, June 20, 2014. (online.wsj.com/articles/iran-could-outsource-its-nuclear-weapons-program-to-north-korea-1403303442); Also see *Fox News* interview with Ambassador Thomas Graham, Jr.: Pamela Browne, "Is Iran outsourcing its nuclear program to North Korea?" *Fox News*, February 28, 2013. (www.foxnews.com/world/2013/02/28/is-iran-outsourcing-nuclear-program-to-north-korea/)

33. The June 1987 missile deal was reportedly worth \$5 million and involved the sale of 90-100 Scud B missiles from North Korea to Iran. "SCUD-B Shahab-1," *Federation of American Scientists*, accessed January 25, 2016. (www.fas.org/nuke/guide/iran/missile/shahab-1.htm)

SHIG is similar to most Iranian government entities involved in nuclear- and ballistic missile-related proliferation in that it is constantly adding new front companies and individuals to a network that operates with hundreds of individuals and entities to procure material, expertise, and equipment.³⁷ Many of the entities reported to have been involved in procurement for SHIG rely on North Korean firms and China-based brokers and intermediaries.³⁸ This raises additional questions that are crucial to understanding the Iran-DPRK nexus:

- North Korea and Iran both have dangerously expanding ballistic-missile arsenals.³⁹ That includes Pyongyang's recently tested *Unha-3* ICBM "space launch vehicle" as well as the rapid-launch intermediate-range *Musudan*, based on a Soviet SSN6.⁴⁰ Does North Korea have the means to

deliver nuclear weapons via missiles, and if so, has it transferred that know-how to Iran?

- Is there evidence of Iran-DPRK efforts to acquire sensitive ballistic-missile-related materials and technologies (such as graphite and tungsten, guidance, and navigational systems)?
- Iran continues to develop a growing range of short and medium-range ballistic missiles. What are Tehran's plans for developing space launch vehicles such as the *Simorgh*, which could be capable of ICBM ranges if Iran develops suitable reentry vehicles?⁴¹

Several companies are also known to be involved in facilitating nuclear-related activities between Iran and North Korea, and several have been officially sanctioned by the United States and the European Union. These include the Saeng Pil Trading Corporation (SPTC), which appears to have been involved in brokering the sale of the Chinese-origin precision-guided munitions known as *Lei Shi*.⁴² SPTC's illicit trade has reportedly included key components for the munitions, including guidance systems.

- Is the United States monitoring the better-known North Korean trading companies that could be

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Research Service, March 4, 2011. (fpc.state.gov/documents/organization/158487.pdf); For a comprehensive list of all State Department-sanctioned entities for nonproliferation, see U.S. Department of State, Bureau of International Security and Nonproliferation, "Nonproliferation Sanctions," November 30, 2015. (www.state.gov/t/isn/226423.htm)

37. U.S. Department of the Treasury, Press Release, "Treasury Designates Iranian Nuclear and Missile Entities," October 12, 2008. (www.treasury.gov/press-center/press-releases/Pages/hp1113.aspx)

38. U.S. Department of the Treasury, Press Release, "Treasury Sanctions Company And Individuals Linked To North Korean Weapons Of Mass Destruction Program," January 24, 2013. (www.treasury.gov/press-center/press-releases/Pages/tg1828.aspx); U.S. Department of the Treasury, Press Release, "Treasury Targets Networks Linked to Iran," August 29, 2014. (www.treasury.gov/press-center/press-releases/Pages/jl2618.aspx)

39. For background on the North Korean ballistic missile arsenal, see Markus Schiller, "Characterizing The North Korean Nuclear Missile Threat," *Rand Corporation*, 2012. (www.rand.org/content/dam/rand/pubs/technical_reports/2012/RAND_TR1268.pdf)

40. Markus Schiller, "Characterizing the North Korean Nuclear Missile Threat," *Rand Corporation*, 2012. (www.rand.org/content/dam/rand/pubs/technical_reports/2012/RAND_TR1268.pdf); David Wright, "An Analysis of North Korea's Unha-2 Launch Vehicle," *Union of Concerned Scientists*, March 20, 2009. (www.ucsusa.org/sites/default/files/legacy/assets/documents/nwgs/Wright-Analysis-of-NK-launcher-3-18-09.pdf)

41. Anthony H. Cordesman, "Iran's Rocket and Missile Forces and Strategic Options," *Center for Strategic and International Studies*, October 7, 2014. (www.csis.org/publication/irans-rocket-and-missile-forces-and-strategic-options)

42. "Commission Implementing Regulation (EU) No. 137/2013 of 18 February 2013," *Official Journal of the European Union*, February 19, 2013. (eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R0137); The Luoyang Optoelectro Technology Development Center (LOEC), known as the 612 Institute, produces precision-guided munitions such as the LS-6 Thunder Stone precision-guided glide bomb and various air-to-air missile such as the PL-5, PL-9, which have been exported to several countries including Iran and North Korea. Wendell Minnick, "China Developing Counterstealth Weapons," *Defense News*, January 31, 2011. (archive.defensenews.com/article/20110131/DEFFEAT04/101310315/China-Developing-Counterstealth-Weapons)

involved with Iranian transactions, such as SPTC? Is Washington tracking the representatives of these companies in countries of the former Soviet Union, where the firms reportedly purchase export-controlled items such as Scud missile components?⁴³

- Namchongang – a trading company subordinate to Pyongyang’s General Bureau of Atomic Energy – is one of the DPRK’s primary entities involved in illicit procurement of nuclear-related items.⁴⁴ What is being done to stop the subsidiaries, front companies, and international brokers that act on the company’s behalf to acquire sensitive raw materials (such as high-purity cobalt and titanium for maraging steel)?
- The DPRK’s Mining Development Guidance Bureau is North Korea’s primary entity for arms trading. Are there contacts between the bureau and Iranian government and commercial entities? Are there contacts between Iran and North Korean trading companies that procure commodities and technologies in support of defense R&D programs?⁴⁵

43. For references to North Korea’s use of illicit procurement tactics, see John S. Park, “The Key to the North Korean Targeted Sanctions Puzzle,” *The Washington Quarterly*, November 1, 2014. (twq.elliott.gwu.edu/key-north-korean-targeted-sanctions-puzzle/); Timothée Germain, “Proliferating trafficking: an overview of the methods,” *Centre d’Etudes de Sécurité Internationale et de Maîtrise des Armements* (France), August 2013. (www.cesim.fr/observatoire/eng/83/article/172); United Nations, Security Council, “Report of the Panel of Experts established pursuant to resolution 1874 (2009),” March 6, 2014. (www.un.org/ga/search/view_doc.asp?symbol=S/2014/147)

44. United Nations, Security Council, Press Release, “Security Council Committee Determines Entities, Goods, Individuals subject To Measures Imposed on Democratic People’s Republic of Korea by Resolution 1718 (2006),” July 16, 2009. (www.un.org/press/en/2009/sc9708.doc.htm)

45. “Report: Botched North Korean missile test killed 20 in Syria town,” *World Tribune*, August 17, 2009. (www.worldtribune.com/worldtribune/WTARC/2009/me-syria0651_08_16.html)

Policy Recommendations

The signs of military and scientific cooperation between Iran and North Korea suggest that Pyongyang could have been involved in Tehran’s nuclear and ballistic-missile program, and that state-run trading companies may have assisted in critical aspects of Iran’s illicit nuclear-related activities. Washington, however, needs a better understanding of Iranian and North Korean proliferation networks and the impact of U.S. government demarches, designations, sanctions, and arrests in order to improve the possibility of interdicting illicit materials. To answer the most critical intelligence questions on Iran-DPRK nuclear cooperation, Washington should consider the following steps:

- **Get China on board.** Iranian and North Korean proliferators turn most often to the world’s largest illicit marketplace, China, where they are able to conceal the most important elements of any illicit deal: the identity of intended end users and intermediaries, and the finance and transport of dual-use goods. If Beijing were a willing partner and better integrated into the global counter-proliferation effort, North Korean, Iranian, and other proliferators would have a much harder time obscuring their identities, roles, and transactions.
- **Study key locations.** The locations of DPRK trading companies say a great deal about how Pyongyang is looking to evade sanctions and move equipment through established procurement chains. International efforts should revolve around some of Iran and North Korea’s known locations of choice, such as Damascus, Phnom Penh, Cairo, Algiers, and Kampala, Uganda. A heavy focus should be placed on Africa – a particularly permissive environment for evading sanctions.
- **Insist on greater financial transparency.** A report by the intergovernmental Financial Action Task

Force found that Iran and North Korea are the only two countries that pose a threat to the international financial system itself, “with substantial risks emanating from money laundering and terrorist financing.”⁴⁶ After implementation of the nuclear deal with Iran, new measures to protect the integrity of the international financial system are now needed.

Even if the above steps are taken, more questions will undoubtedly remain. In the wake of the nuclear deal with Iran and recent aggressive actions taken by the DPRK, Washington must strive to gain deeper insights into North Korea’s nuclear program, and the growing threat that it poses to American and Western interests.

- **Create new incentives.** The U.S. Rewards for Justice Program is one of the biggest incentives to sources, facilitators, and testifiers who assist U.S. law enforcement investigations and operations. Rewards for Justice pay-outs should be used to motivate individuals, companies, and foreign-liaison partners to assist with counter-proliferation operations.
- **Enact new legislation.** On January 12, the House of Representatives passed the North Korea Sanctions Enforcement Act by a vote of 418 to 2. The bill requires Treasury to determine whether the DPRK is a jurisdiction of primary money laundering concern, and calls on UN member states to implement sanctions on Pyongyang designed to curb nuclear proliferation, arms trafficking, cash smuggling, and the importation of luxury goods. Importantly, the legislation requires that the U.S. administration report on the “identity of Iranian and North Korean persons that have knowingly engaged in or directed the provision of material support or the exchange of information between North Korea and Iran on their respective nuclear programs.” Enacting the legislation would compel the administration to answer many of the questions posed in this report.

46. Financial Action Task Force, “Public Statement – 24 October 2014,” October 24, 2014. (www.fatf-gafi.org/topics/high-riskandnon-cooperativejurisdictions/documents/public-statement-oct2014.html); Financial Action Task Force, “FATF Public Statement – 22 June 2012,” June 22, 2012. (www.fatf-gafi.org/topics/high-riskandnon-cooperativejurisdictions/documents/fatfpublicstatement-22june2012.html)

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