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Arctic Prospects and Challenges from a Korean Perspective

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ARCTIC PROSPECTS AND CHALLENGES FROM A KOREAN PERSPECTIVE

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Cover photo: The submarine USS *Annapolis* (SSN 760) rests in the Arctic Ocean after surfacing through three feet of ice during Ice Exercise 2009 on March 21, 2009. The two-week training exercise, which is used to test submarine operability and war-fighting capability in Arctic conditions, also involves the USS *Helena* (SSN 725), the University of Washington and personnel from the Navy Arctic Submarine Laboratory. US Department of Defense photo by Petty Officer First Class Tiffini M. Jones, US Navy.



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ACRONYMS

KOGAS	Korea Gas Corporation
KIOST	Korea Institute of Ocean Science and Technology
KMI	Korea Maritime Institute
KOPRI	Korea Polar Research Institute
KORDI	Korea Ocean Research and Development Institute
IASC	International Arctic Science Committee
NSR	Northern Sea Route
MOF	Ministry of Oceans and Fisheries (Korea)
MOU	memorandum of understanding
PPs	permanent participants
TEU	twenty-foot equivalent unit

EXECUTIVE SUMMARY

South Korea's interest in the Arctic reached a peak on May 15, 2013, when the country obtained permanent observer status in the Arctic Council. The country's interest in the Arctic began in the 2000s, following reports of new sea route created by accelerated thawing in the Arctic due to increasing temperatures. A South Korean shipping company completed Korea's first commercial freight voyage via the Arctic Ocean on October 22, 2013, after taking 35 days to make the journey from Ust-Luga port of Russia to Gwangyang port of Korea. This paper examines South Korea's interest and involvement in the Arctic and analyzes its challenges. The paper summarizes the Arctic-related activities the country has pursued so far; examines specific interests in the fields of science, sea routes and hydrocarbon resources, fishing and governance; and, finally, evaluates the challenges ahead. South Korea has made significant progress in entering the Arctic Ocean but many grave challenges must be addressed before the Arctic can become the source of economic prosperity.

INTRODUCTION

South Korea's interest in the Arctic reached a peak on May 15, 2013, when the country obtained permanent observer status in the Arctic Council. The country's interest in the Arctic began in the 2000s, following reports of new sea routes created by accelerated thawing in the Arctic due to increasing temperatures.

Most South Korean Arctic-related activities have been limited to scientific research, but hopes are high that admission to permanent observer status in the Arctic Council will boost South Korea's economic growth. However, the reality is that, considering various challenges facing the country, including the difficult question of when the Arctic Ocean will be deemed

“sufficiently” thawed for sea routes, there may be few tangible results for quite some time.

This paper examines South Korea’s interests and involvement in the Arctic, and analyzes its current and future challenges. It summarizes the Arctic-related activities the country has pursued so far; examines specific interests in the fields of science, sea routes and hydrocarbon resources, fishing and governance; and, finally, evaluates the challenges ahead.

SOUTH KOREA’S INTERESTS AND INVOLVEMENT IN THE ARCTIC

SCIENTIFIC RESEARCH IN THE ARCTIC

South Korea became involved in polar region scientific research when it joined the Antarctic Treaty in November 1986.¹ In February 1988, the King Sejong Research Station was established in Antarctica. A research department dedicated to the polar regions at the Korea Ocean Research and Development Institute (KORDI), now the Korea Institute of Ocean Science and Technology (KIOST), has been active since 1987, but it mainly focussed on the Antarctic — rather than Arctic — environment.

The establishment of the Arctic Council in 1996 increased South Korea’s interest in Arctic research, and the country began conducting joint research with Japan. In June 1999, two scientists conducted marine research with the Geological Survey of Japan. The following month, South Korea dispatched two researchers to the Chinese icebreaker *Xue Long* (“Snow Dragon”) to explore the Bering and Chukchi seas. In August 2000, scientists conducted marine research with the Arctic and Antarctic Research Institute and with the head research organization of the Ministry of Natural Resources and Environment of Russia.

It wasn’t until 2001 that South Korea laid the foundation for independent research. The Korea Arctic Scientific Committee was established in October 2001. In April 2002, Korea joined the International Arctic Science Committee (IASC). That same month, the Dasan Station was founded in the Svalbard Islands, Norway.² In April 2004, the Polar Research Center at KORDI was expanded to form the Korea Polar Research Institute

(KOPRI).³ Independent research capacity was finally achieved when the Korean icebreaker *Araon* was built in November 2009.⁴ The *Araon* conducts annual research activities in Antarctica from October to April, and in the Arctic Ocean between July and August.

OPENING OF A NEW ARCTIC ROUTE

Since 1951, Arctic temperatures have increased about twice as fast as those in the rest of the world. In summer 2012, the amount of sea ice in the Arctic reached new lows (NASA 2012). The rapid thawing of the sea ice is troubling — but it also offers economic possibilities through new Arctic sea routes.

South Korean research on Arctic sea routes began only recently. A brief study was conducted on the Arctic sea route in 2003, but it failed to gain attention (Choi and Cho 2003, 96). As a result of growing interest in the Arctic, however, the Korea Maritime Institute (KMI) recently published two papers: “A Strategic Overview of Development of the Arctic Ocean”⁵ and “Shipping and Port Condition Changes and Throughout Prospects with Opening of the Northern Sea Route.”⁶

Currently, a ship trying to reach Northern Europe from Northeast Asia must travel through the East and South China Seas, the Strait of Malacca and the Suez Canal. The Northern Sea Route (NSR) above Russia offers a drastically shorter route. Currently, the NSR is free of ice for about two months each year, and the ice-free season is expected to grow longer as temperatures rise. In three years, the Arctic Ocean could be ice-free during the summer months (Park 2013). According to one estimate, the NSR could become entirely navigable year round by 2037 (Cho 2013).

A KMI research paper suggested that this would reduce the travel distance by 40 percent, cutting the time by a maximum of 10 days and reducing fuel costs by 25 percent (Lee, Song and Oh 2011). In addition, using the NSR will allow ships to avoid the Strait of Malacca, the Strait of Hormuz and the Suez Canal, which have heavy traffic. Lastly, the NSR is currently free of piracy, unlike, for example, the Gulf of Aden.

3 KOPRI categorized South Korea’s entry into the Arctic Ocean through scientific research in three phases. The first phase started around 2000, the second when Dasan Station was established and the third when South Korea conducted joint research with other countries (Kim 2012, 60).

4 The *Araon* weighs 7,487 tons with a length of 111 metres and depth of 9.9 metres. The icebreaker can accommodate 85 passengers and can navigate waters for up to 70 days, with a top speed of three knots, breaking ice as thick as one metre.

5 See Hwang, Eom and Heo (2010).

6 See Lee, Song and Oh (2011).

1 Korea became an Antarctic Treaty Consultative Party in October 1989.

2 See http://eng.kopri.re.kr/home_e/contents/e_3210000/view.cms.

Korea's first use of the NSR occurred in July 2009, when two cargo ships departed from Ulsan, South Korea, and arrived in Rotterdam, the Netherlands, via the Bering Sea and the Arctic Ocean (Kramer and Revkin 2009). In 2010, four vessels made the journey; this number increased to 34 in 2011 (*The Economist* 2012). In 2012, 46 ships traversed the NSR (Milne 2013) — and as many as 10 ships came to and from South Korea. As of September 11, 2013, the Russian NSR Administration has granted some 495 ships permission to travel through the NSR.⁷

South Korean shipping companies began planning trial navigations to the Arctic in 2011, but were unable to follow through. With support from the Ministry of Oceans and Fisheries (MOF) through cuts in wharfage, Stena Polaris, a naphtha-laden freighter operated by Korean logistics company Hyundai Glovis, completed Korea's first commercial freight voyage via the Arctic Ocean on October 22, 2013, after taking 35 days to make the journey from Ust-Luga port of Russia to Gwangyang port of Korea (*Yonhap News* 2013a).

TRANSFORMING BUSAN PORT INTO A LOGISTICS-ORIENTED HUB PORT

As of 2011, South Korea's Busan Port ranked fifth in the world in terms of cargo, after Shanghai, Singapore, Hong Kong and Shenzhen (World Shipping Council 2013). Increased usage of the NSR will shift the centre of logistics to Northeast Asia — and Busan stands to benefit immensely due to its geographical location. According to a KMI report, the current container traffic between Asia and Europe amounts to 26 million 20-ft equivalent units (TEU), and this is expected to increase four to six fold by 2030; out of this figure, more than 85 million tons of cargo is predicted to travel via the NSR (Lee 2012, 82). If the NSR is actively used, the Singapore and Hong Kong ports will likely see less traffic.

POTENTIAL PARTICIPATION IN HYDROCARBON RESOURCE DEVELOPMENT AND EXPLOITATION

Another major area of interest is Arctic resource development. The US Geological Survey announced in 2008 that the Arctic holds 13 percent of the world's oil (90 billion barrels) reserves and 30 percent of its natural gas reserves (47 trillion m³) (US Geological Survey 2008). The economic value of the untouched oil and gas in the Arctic is said to be worth US\$13.6 trillion, while the value of other minerals in the Arctic Ocean such as iron ore, nickel and copper is expected to reach US\$1.5 to US\$2 trillion.

South Korea does not produce oil, either on land or in the sea. In addition, the country relies heavily on imports

for most minerals, such as iron ore. As of 2010, South Korea imported 870 million barrels of oil, 82 percent of which came from the Middle East (*Yonhap News* 2011). Thus, diversifying the oil import lines is crucial to its energy security. In addition, the KMI estimated that about US\$1 billion in annual transportation costs would be saved if Arctic oil replaced just 10 percent of the oil imported from the Middle East (Lee 2012, 78).

South Korea hopes to increase direct participation in the development and import of Arctic hydrocarbon resources. So far, the country's track record in joint resource development has been very modest. The Korea Gas Corporation (KOGAS) pursued the development of the mining fields at West Cutbank and Horn River in British Columbia, Canada, by sharing equal stakes with the Canada-based Encana in 2010. In 2011, KOGAS acquired a 20 percent stake in the Umiak gas field in the Arctic. Unfortunately, a boom in shale gas production in North America drove prices down, suspending the development of the West Cutbank and Umiak field (*Money Today* 2013a).

BOOSTING THE SHIPPING AND OFFSHORE PLATFORM INDUSTRIES

Increased traffic in the NSR is expected to greatly benefit South Korea's shipbuilding industry. Arctic navigation requires special vessels, such as icebreakers, container ships with icebreaking capability, icebreaking tankers and fuel ships transporting liquefied natural gas, all of which sell for high prices. South Korean shipbuilders — among the world's top manufacturers — have been busy obtaining orders for such ships. Daewoo Shipbuilding & Marine Engineering,⁸ STX Offshore and Shipbuilding Company, Hyundai Heavy Industries,⁹ and Samsung Heavy Industries have recently received orders for such vessels. In sum, the South Korean shipbuilding industry is enjoying a great boon from the opening of the NSR.

In addition, South Korea's offshore platform industry is expected to take off as a result of hydrocarbon development in the Arctic. Although it is difficult to predict the increase in demand for offshore platforms, the KMI estimates that US\$9 billion worth of additional orders will be placed by 2020 (Lee 2012, 78).¹⁰

⁸ See, for example, *Money Today* (2013b).

⁹ See, for example, *Chosun Ilbo* (2011).

¹⁰ The volume of orders in the global offshore platform market reached US\$48.6 billion from January to August 2012. Among them, Brazil took up 36.8 percent, South Korea 27 percent and China 13.1 percent. Cho Sang-rae, head of the Society of Naval Architects of Korea, estimated the offshore platform market would outgrow the shipping industry by 2030, worth about US\$450 billion (*Yonhap News* 2013b).

⁷ See www.nsra.ru/en/razresheniya/.

ENTERING INTO THE ARCTIC FISHERIES INDUSTRY

Currently, fishing is not a major industry in the Arctic Ocean. Fishers operate in some areas for about six months (April to September). However, with continuous thawing of the ice, the fishing industry is expected to grow gradually. Cheung et al. (2010, 32) estimate that between 2005 and 2055, the maximum catch in the exclusive economic zone of Arctic coastal states will increase by 45 percent in Norway, 27 percent in Greenland, 25 percent in the United States, 21 percent in Russia, 20 percent in Iceland and five percent in Canada.

South Korea's high-sea fishing industry currently operates in the Sea of Okhotsk and the Bering Sea, but has yet to venture into the Arctic Ocean. According to an industry expert, successful entry into the Arctic Ocean by the South Korean fishing industry requires strong government support — a grant for trial operations and crew training, along with information on geography and the weather (Song 2012a; 2012b, 32).

INCREASING PARTICIPATION IN ARCTIC GOVERNANCE

South Korea's participation in Arctic governance began when it applied for an ad hoc observer status in the Arctic Council in 2008. As commercial interests in the Arctic route and resources grew, South Korea sought more active participation.

South Korea has approached Arctic governance in two ways: by becoming a permanent observer in the Arctic Council and by entering into bilateral agreements with Arctic nations. The council, which began as an intergovernmental consulting body to address regional Arctic issues, has now established a permanent secretariat and adopted legally binding agreements.¹¹ Recognizing the council's gradual transformation into an "international organization," South Korea lobbied for permanent observer status. On May 15, 2013, South Korea was admitted as a permanent observer. South Korea's new status allows it to observe all Arctic Council meetings and participate in the projects of the six working-level committees. It can also suggest and finance new projects.

South Korea's bilateral efforts are mainly focussed on Russia since it is geographically close and occupies most of the coast along the NSR. In October 2010, both countries signed the Agreement on Maritime Transport, and agreed

11 For example, in 2011, the Arctic Council decided to establish a secretariat in Tromsø, Norway, which was completed in 2013. It also adopted the Arctic Search and Rescue Agreement in 2011, and the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic in May 2013.

to construct a gas pipeline via North Korea in 2012. On July 9, 2013, at the thirteenth meeting of the Korea-Russia Joint Council on Economy, Science and Technology, the two also signed a memorandum of understanding (MOU) for bilateral cooperation in port development.

In addition, former South Korean President Lee Myung-bak visited Denmark (Greenland) and Norway for the first time in September 2012 to strengthen cooperative relations (An 2012). Four MOUs concerning energy and resource cooperation in Greenland were signed. The South Korean government also joined the Svalbard Treaty on September 7, 2012.¹²

SOUTH KOREA AS A PERMANENT OBSERVER IN THE ARCTIC COUNCIL: PROSPECTS AND CHALLENGES

FUTURE PROSPECTS

Forging and Maintaining Good Relations with Arctic Council Members and Permanent Participants

Although South Korea, Japan and China were recently granted observer status in the Arctic Council, the applications were met with some wariness.¹³ Some apprehension is understandable as the council is primarily a regional organization that deals with regional issues — in fact, the council has still not formulated a comprehensive plan that incorporates the interests of non-Arctic entities (Manicom and Lackenbauer 2013, 2). Assertive scholarship by some scholars, urging China to make claims to the Arctic Ocean, has contributed to the unease (ibid., 1),¹⁴ as have the ongoing maritime and territorial disputes in the East and South China Seas.

On the whole, however, the Arctic states welcome the new observer nations, as they add considerable financial and scientific capacity to the council's working groups (ibid., 5). In addition, as a condition for admission as observers, these countries have accepted the Arctic states' "sovereignty, sovereign rights and jurisdiction in the Arctic" and recognized the Law of the Sea as the legal foundation for Arctic management (Arctic Council 2011).

12 Officially known as the Treaty Regulating the Status of Spitsbergen and Conferring the Sovereignty on Norway, the treaty was adopted on February 9, 1920 in Paris and took effect on August 14, 1925.

13 See, for example, Byers (2011) and Wright (2011).

14 There is even a widespread misperception that China claims a portion of the Arctic Ocean.

South Korea, in particular, enjoys good bilateral relations with the Arctic states, as evidenced by the many Arctic-related bilateral agreements. The country must continue to ride this current of goodwill. In addition, South Korea must be careful not to marginalize the indigenous permanent participants (PPs) of the council. If South Korea is serious about participating in the council, it should forge constructive relationships with the PPs, perhaps by working on the Sustainable Development Working Group (Manicom and Lackenbauer 2013, 5).

A Comprehensive Arctic Strategy — South Korea's Pan-Government Arctic Development Plan

South Korea seeks to leverage its permanent observer status to gain a foothold for entering the Arctic Ocean. To this end, it recently announced a comprehensive Arctic strategy, the details of which are to be revealed later this year (Yoon 2013).

Efforts to create a comprehensive Arctic strategy began last year during the first Policy Forum for an Arctic Strategy, held on September 7, 2012. In his presentation "The Direction of the Arctic Policy," Young-Jin Yeon, the Land, Infrastructure and Transport Ministry's marine policy director, proposed developing a mid-to-long-term Arctic plan and business model, stronger "bipolar" research capacity, and coordination of polar region policies to form a basis for future Arctic policies (Yeon 2012, 18–21). In November 2012, the ministry announced measures to modernize polar region policies, which included the pursuit of bipolar policies, the formation of a new government department for the polar regions, and a pan-governmental council to coordinate the policies of different departments. At the end of 2012, a bill for the promotion of polar activities was sent to the National Assembly.¹⁵ The bill proposes systematic government support for various scientific activities related to the polar regions. It also stipulates the separation of KOPRI from KIOST, a move that was somewhat controversial.

After the new administration (led by President Park Geun-hye) took office in February 2013, the MOF was reinstated. With the MOF taking the lead, the government has been developing an Arctic policy master plan. On June 24, 2013, the MOF held the second Policy Forum for an Arctic Strategy, where it announced the Pan-Government Arctic Development Plan. The MOF provided an outline of the plan and stated that details would be revealed later this year.

The plan consists of four parts. First, it calls for greater international cooperation in the Arctic, including plans for more vigorous participation in the Arctic Council and other organizations, as well as bilateral cooperation with Arctic nations. Second, it supports more active scientific research, including plans for improving research infrastructure, climate change research capacity and joint studies. Third, it attempts to identify an Arctic business model, which will include measures for stronger cooperation with Arctic nations in maritime transportation and port development, including development of the Arctic route, and in the areas of shipbuilding, offshore platforms, energy and resources, along with measures to enter the Arctic fisheries industry. Fourth, it seeks to establish legal institutions, including new laws to support Arctic activities, and form an Arctic information centre.

CHALLENGES AHEAD

Limitations as a Permanent Observer

An observer of the Arctic Council has no voting rights and a very limited voice. The primary role of observers is to observe the work of the council and participate in the various working groups. Despite these limitations, South Korea can still represent opinions of non-Arctic nations, particularly East Asian countries. Building close cooperative relations with other observers that share similar interests with South Korea, such as China and Japan, will be important. In addition, South Korea must not be solely focussed on commercial aspects of the Arctic, but must also address global concerns, such as the protection of the Arctic environment and indigenous peoples.

Challenges Facing Scientific Research in the Arctic

In contrast to South Korea, which did not begin scientific research in the Arctic until the 1990s, Japan started scientific research in polar regions about 50 years ago. Japan established the National Institute of Polar Research in 1973 and built a research station in the Svalbard Islands in 1991. Japan also joined IASC in 1991 and conducted various national and international studies in the Arctic (Ohnishi 2013, 9). Nevertheless, South Korea has made significant strides since the 2000s by establishing research infrastructure and actively conducting research, and South Korean scientists are currently conducting a broad range of research activities.

There are, however, some challenges facing South Korea's research in the Arctic. First, current research infrastructure is insufficient. The Dasan Station leases half of a fairly small two-storey building where researchers only stay for

15 The bill is currently pending. The bill was submitted by the ruling Saenuri Party's leader Hwang Woo-yea on behalf of other lawmakers on November 19, 2012 and introduced to the National Assembly's Agriculture, Food, Rural Affairs, Oceans, and Fisheries Committee on June 18, 2013. See http://likms.assembly.go.kr/bill/jsp/BillDetail.jsp?bill_id=PRC_D1J21X1M1Y9J1R0T1Q7U0W5O8W2C4.

limited periods of time for specific projects. The station also lacks certain research equipment. In Antarctica, by contrast, there are many researchers stationed at the multi-purpose Sejong Station in 18 buildings. The Jang Bogo Station, another research base close to the South Pole, is scheduled to be constructed by 2014. Second, South Korea has only one icebreaker, *Araon*, which is mobilized in Antarctica for most of the year, hindering research activities in the Arctic. Lastly, unlike Antarctic research, which is conducted on the basis of a five-year plan in compliance with the Act on Antarctic Activities and the Protection of Antarctic Environment, Arctic research activities do not enjoy legal support.

It is clear that South Korea still focusses primarily on Antarctica for scientific research and lacks mid-term plans or legal support for Arctic projects. Fortunately, a major part of the Pan Government Arctic Development Plan focusses on strengthening Korea's scientific research activities in the Arctic by improving infrastructure and research capacity, so changes may be coming soon.

Limitations on Using the NSR

To gain a competitive edge over the traditional sea route, the Arctic route must meet various challenges (Lee 2013, 48–49). The first challenge is preventing environmental degradation in the Arctic Ocean. The International Maritime Organization published guidelines on this matter,¹⁶ but the effectiveness of the measures needs further review. The second issue is reducing Russia's expensive ice-breaking and piloting fees. To this end, a compromise between Northeast Asian countries and Russia should be reached. The third problem is finding a balance in the cargo traffic between the Far East (namely, North and East Asia) and Europe. As of 2011, the total volume of containers transported between the Far East and Europe was about 20 million TEU. Out of this, about 14 million TEU were transported from the Far East to Europe, while just 6 million TEU travelled the other way (Gardiner 2012, 21). If ships make round trips, the balance in cargo traffic translates into lower transportation costs. Fourth, there are too few safe ports for services on the Russian coast along the NSR. To meet this challenge, Russia must modernize its ports and harbours. Additional challenges include the lack of a comprehensive shipping management system and sea route information. Until these challenges are met, the traditional sea route will remain dominant.

Balancing South Korea's Economic Goals with Environmental Concerns

South Korea's interest in the Arctic largely stems from the belief that the region is vital for securing the country's future economic growth. This view, however, is too narrowly focussed on commercial gains. Opening the Arctic presupposes rising temperatures around the globe, which may result in a global catastrophe if not controlled. Therefore, a balance must be struck between pursuing commercial interests and protecting the Arctic environment and combatting rising temperatures. China has been accused of placing its national economic goals before environmental commitments;¹⁷ South Korea should take measures to avoid similar criticism.

Preparing in Advance for Geopolitical Changes in East Asia following the Opening of Arctic Routes

The East Sea (Sea of Japan) is expected to play a much larger role 20 to 30 years from now when the Arctic route is freely navigable. Currently, the East Sea functions mostly as fishing grounds; however, it could become a logistics hub when the Arctic route opens up.

Accordingly, ports such as Busan and Ulsan in South Korea, Najin and Sonbong in North Korea and Vladivostok in Russia are likely to see increased traffic. China, which does not share the East Sea with the other countries, has already acquired rights to develop and operate ports in North Korea's Najin and Sonbong for the next 50 years. The two Koreas, Japan and Russia may have to compete more fiercely in the East Sea given China's involvement.

Based on these assumptions, the following policies can be taken into consideration. First, a road map should be established to streamline and expand infrastructure in ports such as Busan. Second, the rising military and strategic value of the East Sea should be taken into consideration along with its increasing economic value. Third, a strategic plan connecting the East Sea, the Sea of Okhotsk and the Arctic Ocean needs to be developed. Fourth, a regional integration approach should be taken to connect inland areas close to the East Sea, such as the Russian Far East, Northeastern China and Mongolia. Fifth, changes in the roles of Dokdo and Ullengdo, South Korea's small islands in the East Sea, should be noted. Dokdo, which is currently under the effective control of South Korea, is at the centre of a major diplomatic discord with Japan as the latter also claims sovereignty over the islet. It is doubtful whether the same territorial conflict will continue for the next 20 to 30 years.

16 See International Maritime Organization (2010).

17 See, for example, Brady (2012, 11).

CONCLUSION

South Korea has made significant strides in entering the Arctic Ocean but many serious challenges must be addressed before the Arctic can become the source of economic prosperity as the local media has recently portrayed it. Until then, the traditional sea routes will remain dominant; thus, South Korea must not neglect its current trade routes and energy security scheme. The government's Pan Government Arctic Development Plan will be fully revealed later this year, and the future success of Korea's Arctic endeavours will rely to a great extent upon the execution of that plan.

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