

Northeast Asia and Mongolia: Infrastructure Network Development Issues

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Abstract

Infrastructure network development issues in Northeast Asia are key to establishing integrated relations in the region, which is rich in mineral resources. As for Mongolia, its transportation network has strategic significance for reducing its isolation in the world and within its own borders. This article examines these issues which require effective cooperation between Northeast Asia and Mongolia, including road, railway and pipeline network development projects in coming years.

Keywords: development, infrastructure, networks

Introduction

The seventh largest country in Asia, Mongolia is one of the largest landlocked countries in the world. It has a total borderline of 8,162 km, of which 3,485 km is shared with the Russian Federation to the north and the remaining border with China to the east, south and west (Altangerel 2005). Improving transport and communication access to seaports or gateways is one of the key factors to enhancing Mongolia's foreign trade competitiveness.

Mongolia's Roads and Asian Highway Networks

Roads are the primary means and conditions to provide reliable passenger transport services and undertake the transportation of goods. The total road network in Mongolia is 49,078 km, of which 11,219 km are state roads and 37,859 km are local roads. Table 1 provides some basic road development indicators from the early 2000s.

Table 1: Road development indicators

Classification	2000	2002	2004
Population (1,000s)	2,407.5	2,475.4	2,533.1
Population density (person/sq.km)	1.5	1.6	1.6
Improved road density (km/sq.km)	0.034	0.035	0.036
Number of vehicles	82,225	103,805	120,418

Source: *Mongolian Statistical Yearbook 2004*, National Statistical Office, Admon Company, Ulaanbaatar.

Roads are administratively classified into two categories as follows:

- *State roads*: State roads are intended to connect Ulaanbaatar with the provincial centers, important towns and border crossings designated by Government resolutions;
- *Local roads*: Local roads are intended to connect provincial centers with other provincial centers and villages.

These roads are also classified by surface type (Figure 1).

Table 2: Road surface type

Surface type	Ratio
Paved roads	11.9%
Gravel roads	12.5%
Improved earth roads	12.7%
Earth roads	62.9%

Source: *Mongolian Statistical Yearbook 2004*, National Statistical Office, Ulaanbaatar.

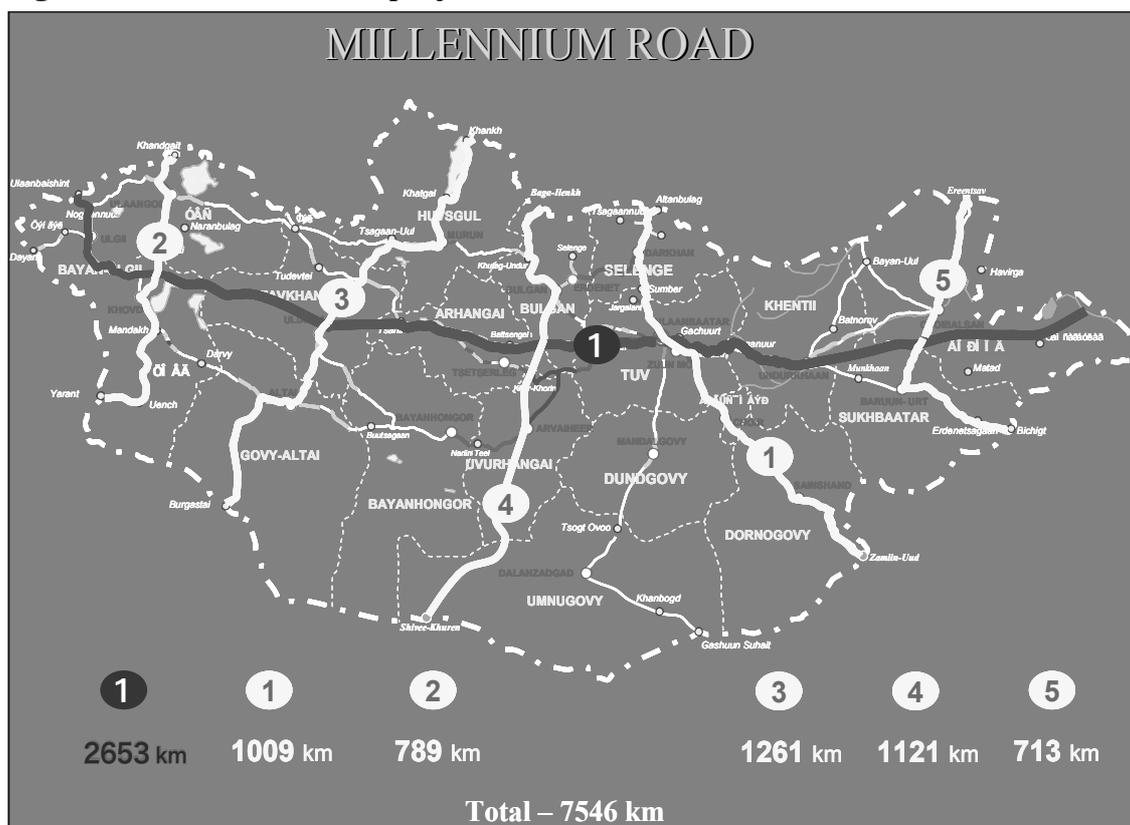
The reasonably poor network places limitations on road transport within Mongolia, and as a result, the road and rail transport networks are currently being refurbished with external assistance (Altangerel 2005). The government of Mongolia has been implementing the Millennium Road project since 2001, with east-west arterial links and north-south vertical links to improve road connections with neighboring countries (Figure 2). This project is supported by the Asian Development Bank, the World Bank, the Kuwait Fund and the governments of Japan and South Korea.

Figure 1: Road network in Mongolia by surface type



Source: Roads' Department Report, Ministry of Roads and Transport, Mongolia 2004.

Figure 2: Millennium Road project



Source: Roads' Department Report, Ministry of Roads and Transport, Mongolia 2004.

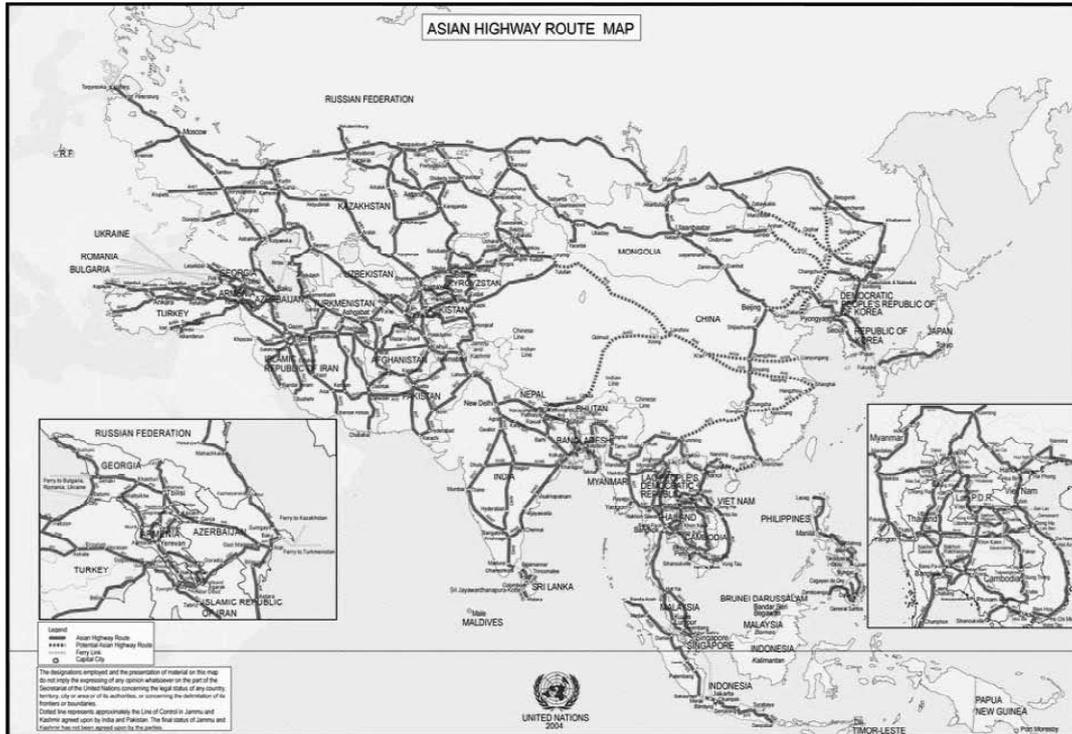
The Asian Highway routes in Mongolia (Figures 3 and 4, Table 3) provide important transit routes for China and the Russian Federation.

Table 3: Status of the Asian Highway in Mongolia

Routes No.	Itinerary	Length, km	Paved, km (Two lanes or more)	Unpaved, km
AH3	Altanbulag – Darkhan – Ulaanbaatar – Nalaih – Sainshand – ZamyunUud	1,009	386	623
AH4	Ulaanbaatar – Hovd – Yarantai	758	11	747
AH32	Sumber – Choibalsan – Ondorhaan – Nalaih – Ulaanbaatar – Uliastai – Hovd	2,325	403	1,922
Total		4,092	800	3,292
Percentage		100	19.6	80.4

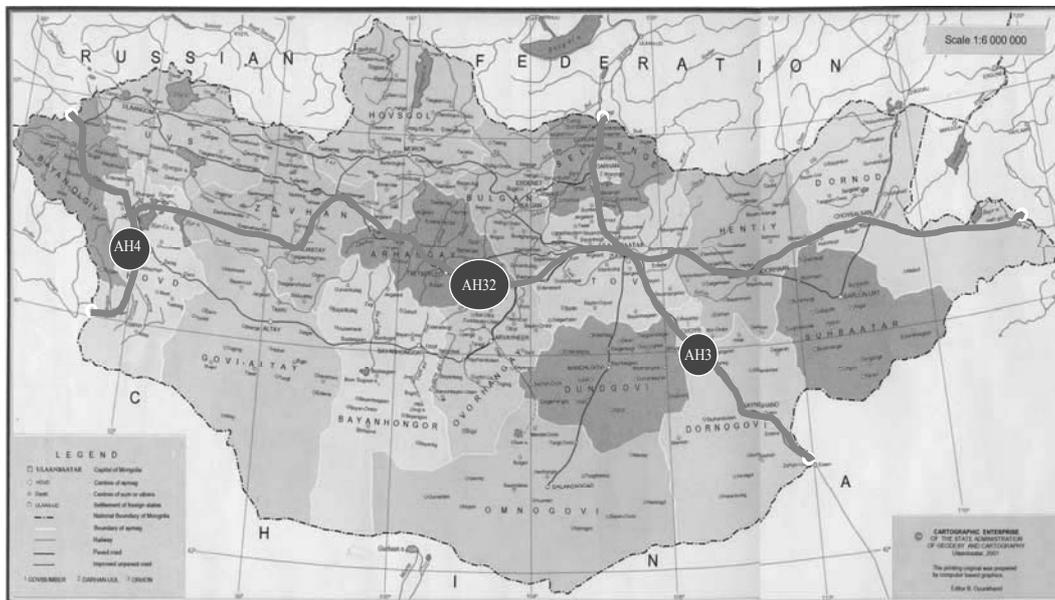
Source: Asian Highway Route Map, United Nations ESCAP (2004).

Figure 3: Asian Highway Route Map



Source: United Nations, ESCAP 2004.

Figure 4: Asian Highway Route Map in Mongolia



AH32 2325km AH3 1009 km AH4 758 km

Source: Maps printed by the Cartographic Enterprise of the State Administration of Geodesy and Cartography, Ulaanbaatar 2001.

Transit Transport Issues

The issue of transit transport is a major concern to Mongolia. As a landlocked country with a fragile and small economy, Mongolia depends on the world market prices of a few export items, such as copper and gold, and the issue of transport may impede the abilities of landlocked countries to fully benefit from the globalization process of international trade and foreign direct investment. Mongolia currently spends a high 15 percent of its export earnings on transport services, while its neighbors spend on average less than 6 percent in transit.

Both China and the USA are Mongolia's two biggest export trading partners, with China taking the lion's share of 47.6 percent. For imports, Russia and China combine to represent more than 58 percent of imports into Mongolia (Table 4).

Table 4: Main trading partners of Mongolia 2004

Export FOB to:	%	Import CIF from:	%
China	47.6	Russian Federation	33.5
USA	17.9	China	25.2
Russian Federation	15.8	Japan	7.3
Japan	3.8	South Korea	6.0

Source: *Mongolian Statistical Yearbook 2004*, National Statistical Office, Ulaanbaatar.

Mongolia's transportation infrastructure is currently faced with some difficulties in handling the increase of goods and passengers, and requires future expansion and development. In freight transportation, a reliable railway system plays an important role (Table 5).

Table 5: Freight transportation 2004

Transport type	Freight movement, 1000 tons		Freight traffic, million ton x km	
	2004	%	2004	%
Railway	14,031.8	64.98	8,878.1	96.8
Road	7,561.9	35.02	282.3	3.2
Air	1.9	0.0001	8.1	0.001
Total	21,595.6	100	9,168.5	100

Source: *Mongolian Statistical Yearbook 2004*, National Statistical Office, Ulaanbaatar.

Railway. The majority of Mongolian imports and exports are carried by rail, both within the country and in neighboring countries. The main railway section of the Mongolian Railway is a trunk line between Sukhbaatar, on the Russian border, through Ulaanbaatar to Zamyn Uud, on the Chinese border – a distance of around 1,400 km. In reasonably good conditions, this section of line is the main transit route for cargo moving between China and the Russian Federation via Mongolia. Rail carries the bulk of Mongolian cargo tonnage, due to spur rail lines that connect to the major coal mines and the Erdenet copper mine.

Road transportation. Mongolia acceded to the International Transport of Goods under Cover of TIR Carnets (TIR Convention 1975) on October 1, 2002. The International Road Transport Union (IRU) is in the process of authorizing the National Road Transport Association in Mongolia (NARTAM) as an issuing association, likewise the authorization of the Mongolian Customs' authority is underway, according to the IRU. Russia is also

a member of the TIR Convention, but not China. Presently a restricted amount of goods containers are transported by road from Russia to Mongolia.

Air transportation. Because of vast distances and poor roads, the domestic and international air transport system of Mongolia is relatively well developed. Traditionally, airfreight did not play an important role in Mongolia's transit traffic. Today, however, it is growing and has greater potential for the near to intermediate future. If Mongolia is able to diversify its export mix to include high-value, low-bulk goods such as cashmere goods, handicrafts and electronics, large-scale air transport will become not only feasible but essential. Now Mongolia has direct flights to Moscow (Russian Federation), Beijing (China), Berlin and Frankfurt (Germany), Tokyo and Osaka (Japan), Seoul (South Korea), Irkutsk (Russian Federation) and Huh Hot (China).

Mongolian transit corridors. Tianjin Port, a large, efficient and well-equipped port, is currently the only Chinese seaport used for Mongolian transit traffic, and is expected to expand in 2010 (Altangerel 2005). Six Russian seaports are available to Mongolia: Vladivostok, Nakhodka, Vanino and Vostochny, all accessible to the Sea of Japan, as well as St Petersburg on the Baltic Sea and Novorossick on the Black Sea. As well as having adequate facilities, all of these ports have satisfactory rail connections (Altangerel 2005).

In terms of trade patterns, it must not be forgotten that the main trading partners for Mongolia are China and the Russian Federation, so a large amount of traffic is on a bilateral basis. However, the opportunity to improve sea access in order to capture new markets should be considered a priority for Mongolia.

Table 6 presents a selection of possible alternative transit routes for Mongolia. Most of the data on these transit corridors was related to import transit traffic. Route 4 to Belarus is interesting as it connects Mongolia with Brest in Belarus, which is not a seaport. Mongolia's justification for the selection of Brest is the possibility that Belarus has the potential to become a gateway with Western Europe for import and export traffic by all land routes.

Table 6: Selected transit routes and their import transport cost and time to Ulaanbaatar

Route	Origin	Cross border	Mode	Distance	Cost/TEU*	Transit time (Average)
1	Tianjin Port (China)	Eronhot (China) -Zamyn Uud (Mongolia)	Rail	1,700 km	\$1,400	7 days
2	Tianjin Port (China)	Erenhot (China) - Zamyn Uud (Mongolia)	Road & Rail	1,684 km	\$1,712	5 days
3	Vladivostok/Vostochny Port (Russia)	Naushka (Russia) - Suhbaatar (Mongolia)	Rail	4,500 km	\$1,160	17 days
4	Brest dry port (Belarus)	Naushka (Russia) - Suhbaatar (Mongolia)	Rail	7,340 km	\$1,020	5 days

Source: Compiled by the author from industry sources. * TEU: Twenty-foot Equivalent Unit

Mongolian exporters, importers and transport service providers must re-evaluate their strategies for freight transportation, as all possible transfers between modes must be considered. With the development and improvement of infrastructure in the NEA region, Mongolia has achieved a growing accessibility to the international market. Table 6 provides a summary of import transit costs and times of selected transit corridors.

Natural Gas and Oil Pipeline Network

East Siberia and the Far East of Russia have rich natural resources, namely oil and natural gas resources. At present some organizations, economic entities, design and research institutes of Russia, Japan, China, Korea and Mongolia are extensively discussing several radically different options of natural gas export from the eastern regions of Russia to Northeast Asian countries. However, these options are not well-coordinated with each other in price, volume, scheduling of resource development, nor the introduction of supplies to the domestic market and to Northeast Asian countries.

China, Japan and South Korea are willing to provide their fast-growing economies with reliable energy sources, while the Russian Federation is interested in using its natural resources and occupying new markets. Now, at least, these two interests are coinciding.

Oil

At present, the Russian Federation delivers to Asia only five percent of its oil export, but this volume surely can be increased. In this regard, it is necessary to consider the following factors:

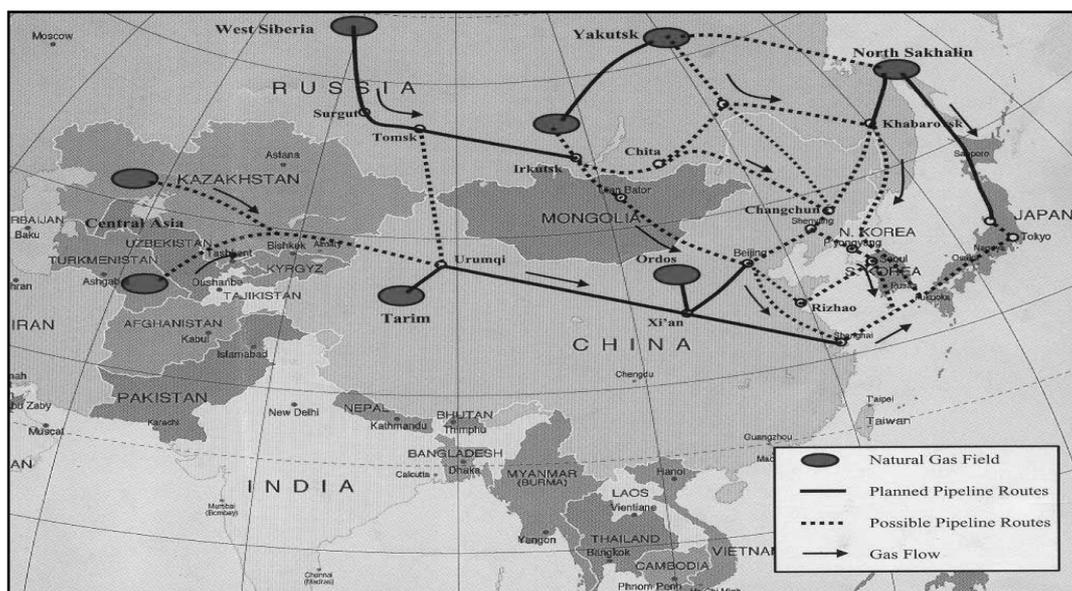
- Asian and Pacific countries are geographically closely located and are politically stable compared with the Near East, presenting less risk;
- Asia is intensively developing and expanding new markets;
- Russian oil is of a highly competitive quality.

According to statistical data, in 2004 Russia exported to China 6.0 million tons of oil and estimated to deliver by rail 10 million tons in 2005 and 15 million tons in 2006. The Russian company Yukos made a proposal to deliver oil from western Siberia to the central region of China through Mongolia. Nowadays, there are four routes (Figure 5) in use:

1. Taishet (Russia)–Mongolia–Central region of China;
2. Taishet–Skvorodino (Amur) region–Central region of China;
3. Taishet–Nakhodka, Primorski Krai–Skvorodina (Amur) region–northeast China;
4. Taishet–Primorski Krai–Nakhodka.

Currently China and Japan are competing for the oil pipeline project, and Moscow is making intensive negotiations with China and Japan.

Figure 5: Pipeline Route Map in Northeast Asia



Source: Report of the International Conference on Northeast Asian Natural Gas and Pipeline 2003

Natural gas

Analysis of the natural gas markets in Northeast Asian countries has allowed the following demands be made for Russian natural gas (Table 7).

Table 7: Demand by Northeast Asian Countries for Russian Natural Gas (unit: bcm)

Countries	2010	2015	2020
China	20	20	25
South Korea	10	22	25
North Korea	-	3	5
Mongolia	-	0.2	0.5
Other NEA countries*	6.7	28.0	28.4

**Natural gas demand is met in the form of LNG*

However, between 1997 and 2001, several negotiations and talks were held about the natural gas pipeline project from Irkutsk’s Kovyktinskoye gas-condensate deposit to China and South Korea. This project has been delayed due to different interests and geopolitical contradictions of the participating countries, such as:

- Participating sides, with the exception of Mongolia, do not only want to buy sides, but want to become shareholders by making an investment in the deposit. This proposal was not acceptable to Russia.
- The economic feasibility of the project was decreasing because China preferred the “Eastern” version, which covers a longer distance than the “Western” version;
- China’s market was not ready, due to a lack of adequate domestic

warehousing and delivery networks;

- Estimated oil prices are not acceptable for China (Russia offers the price of USD\$70-120 per 1000 m³, but the domestic price in China is only USD\$18-30);
- The “Eastern” version will cover a long distance over geographically harsh climatic conditions, such as populated areas, regions of seismic activity and permafrost zones, resulting in high construction costs.

Pipeline impact on the natural gas market in Mongolia

The Mongolian petroleum and mineral resource authority has been participating on behalf of Mongolia in the natural gas pipeline project. According to a feasibility study of the natural gas pipeline from Russia to China, a 1,220mm-diameter pipe is planned to be built by two routes. The “Western” version, from Kovyktinskoye to the Chinese border, runs for 1,979 km and has a 1,019 km-long section at between 960 – 1,979 km of its total length. This particular section runs through the areas of Sukhbaatar, Darkhan, Baruunharaa, Zuunmod, Choir, Sainshand, Zamyn Uud in the territory of Mongolia. This route is the shortest one. There are also some other advantages in this route, such as geographically good conditions, relatively developed infrastructure such as a railway, power lines, phones and paved roads from Altanbulag, the northern border post of Mongolia through Ulaanbaatar to Zamyn Uud. In the event the pipeline goes through Mongolia, Mongolia would be a transit country in the early stages as well as a consumer.

Any pipeline project would have more economic efficiency if it does not aim at a single market, but several potential markets. There is no doubt that some time in the future the pipeline route crossing Mongolia will be constructed.

The natural gas pipeline project will play a significant role in the Mongolian economy and infrastructure development. Natural gas will become a new source of energy as a cheaper and ecologically friendly fuel in the more populous and industrial larger cities.

Discussion and Conclusion

As a country with vast distances between markets both domestically and internationally, Mongolia’s transportation network has strategic significance for reducing its isolation in the world and within its own borders, as well as playing a key role in the future economic development of the country. In order to develop economic relations between Northeast Asia and Mongolia, in addition to ongoing road constructions, the construction of a new railway line is essential, with 400 km between Choibalsan (Mongolia) and Arshaan city (Inner Mongolia). It is also important to connect Choibalsan city with the Arshaan road network in order to facilitate economic cooperation in Eastern parts of the Inner Mongolia Autonomous Region, the People’s Republic of China and Mongolia. The two countries have already agreed in principle to build a bridge over the border river, Nomrog. Construction work is expected to be started in the near future.

As the construction of a future pipeline route in Mongolia is likely, Mongolia should prepare to consume oil and natural gas by researching and utilizing natural gas in power and thermal energy production, and in houses and transportation.

Mongolian exporters, importers and transport service providers must re-evaluate their strategies for freight transportation, taking into account the advantages and disadvantages of possible transit transport corridors, as all possible transfers between

modes must be considered. With the development and improvement of infrastructure in the Northeast Asian region, Mongolia can achieve a growing accessibility to the international market.

In Northeast Asia, there is a high possibility to establish effective interrelated infrastructure networks, for which the population, distribution of resources, economic development, and energy demand prospects should be considered.

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