

JAPAN AS A POSSIBLE SUPPLIER OF OIL TO THE MAINLAND IN EARLY MIDDLE AGES

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After the event of Primorye's Kraskinskoe gorodishche (Bohai state) having yielded fragments of a vessel with oil remnants in the form of bitumen, we've got a new ideas about the role the hydrocarbons played in the early medieval economy of the Far East. In this case the most probable use for the oil was to illuminate urban dwellings. This may indicate the presence of available natural oil seeps within the Bohai state or the existence of regular trade relations with known suppliers from remote areas.

Still the question remains about geography and routes connecting the producers and consumers of the oil. One of hypothetically possible areas containing oil and gas provinces is the northwestern coast of the Japanese islands. Thee area is known for tectonic activity and repeated destruc-

tion of fluid accumulations leading to outpouring of natural hydrocarbon stuff on land surface. Such places have been used by humans since the Neolithic era.

One of the reasons for resorting to the oil and gas fields on the Honshu island could be the fact that the Kraskinskoe gorodishche was the administrative center of the district Yang of the Bohai state through which ambassadorial ties with Japan were carried out in VII-X centuries. According to the Japanese medieval chronicles, the oil was mined in the Koshi Province (includes current Niigata Prefecture) as early as 668 ad.

Ключевые слова: Maritime Territory, Japanese islands, Bohai state, Kraskinskoe gorodishche, oil, oil field.

Starting in the 1980s, archaeological projects in the south of Maritime Province (Primorye) have been under methodical development in the area of Kraskinskoye ancient walled town site with dates between 8th and first half of 10th centuries. The site is located 2 km south of Kraskino village beside the estuary of river Tsukanovka in Hasan district. An occurrence of vessel shards with traces of bituminous petroleum (Kojima, Gelman 2011) sparked an interest in the role the substance might have played in the mediaeval economies around the area now referred to as Russian Far East. The immediate questions include availability and locations of crude oil beds, procurement and transportation techniques, and of course modes of use for those hydrocarbons.

The fact that the oil had its use at the Kraskinskoye site (purportedly for illuminating) has the following implications: there must have existed accessible natural surface outlets of crude oil within the Bohai state boundaries; or there could have been established trade routes to import the petroleum from abroad; or we simply misinterpret what we've found because we don't know much about the structure of early mediaeval economies.

Comprehensive Russian publications on the history of Bohai state omit any notion of procurement or usage of hydrocarbons (Dyakova 2014; Shavkunov 1968, 1994). This means we are at the earliest stage of research on this matter.

What we need to do first is to delineate a territory which could have contained oil beds that hypothetically fed the Krasinskoye town. The site is located in the junction between three modern states: Russia, PRC, and DPRK. This makes the search for possible oil procurement sources for Bohai a very tricky task. Also we need to unequivocally exclude continental shelf oil reserves because it seems highly unlikely for them to have been exploited in the early Middle Ages. It would appear only natural if we considered the site's closest neighboring areas as potential sources, first of all Primorye, Korean peninsula, or northeast China. However, we have some reasons to take a look at a rather distant location instead – the Japanese islands.

One of the reasons Japan attracts our attention is that the Krasinskoye site sits on the shore of Sea of Japan. The site is believed to have been an administrative center of the Yan district subordinate to the East Capital, 70 km a far,



Fig. 1. Sea of Japan in early Middle Ages and Japanese archipelago's most important oilfields (after: Geology... 1961; Kirillova et al. 2004; Buryak et al. 1998; Fukui 2010)

near the present-day Hunchun city, Jilin province, PRC (archaeological site of Balyanchen ancient fortified town). We believe Kraskinskoye to have served as a seaport enabling early Mediaeval rulers of the Bohai state (698-926 ad) to send and receive envoys to and from Japan. In VIII–X centuries 35 Bohai missions went to Japan and 13 Japanese missions to Bohai, counting only the officially documented ones (Ivliev, Boldin 2006: 13-14). It is only natural to assume that the missions included merchants. We also cannot exclude private contacts between people from both sides of Sea of Japan, contacts never meant to be mentioned in chronicles.

We must admit we couldn't find direct evidences of Japanese oil supplies in the Bohai merchandise inventories. But there's one thing we would like to point out. The overwhelming majority of listed goods can be considered either as luxury items or cult accessories. Examples include a variety of silk fabrics, or quicksilver, the latter being a component needed to produce bronze statues. What if oil wasn't thought of as "precious" enough item to be catalogued along with prestige goods?

The Japanese direction in the search for hypothetic sources of petroleum that manifested itself on the Kraskinskoye site has an additional reason: the Islands are a unique Northeast Asian place where active tectonic activity impacts natural underground reservoirs in such manner that the crude oil finds its way to the surface, and we all know that natural outlets were the first sources of crude oil in human history.

These days the Japanese archipelago is known to possess three petroleum provinces, all tied to the Sea of Japan's coastal strips (fig. 1). All of them have various kinds of surface traces of naturally spewed hydrocarbons (Geology... 1961; Kirillova et al. 2004; Buryak et al. 1998; Fukui 2010). The locations are Hokkaido, Akita (Aomori-Akita-Yamagata), and Niigata (Niigata-Nagano).

The mediaeval Hokkaido is the least possible source of hydrocarbons hypothetically imported by mainland people because at the time Hokkaido lacked the centralized system of governance. Still there are numerous surface outlets of hydrocarbon substances virtually on all of Hokkaido's petroleum fields such as Kita-Toyomi, Yufutsu, Ishikari, Kamaya, Yamakoshi, to mention a few.

On Honshu petroleum provinces of Akita and Niigata are known for the tendency of their oil beds to coincide with lowlands on the Sea of Japan side. In these provinces there also are many surface manifestations of hydrocarbons, for instance asphalt lakes. Worth noting are Niitsu, Nishiyama, Higashi-Niigata, Kubiki (Niigata Pref.), Amarume (Yamagata Pref.), Sarukawa, Yabase, Yurihara (Akita Pref.). There the probability of recurring ejections of hydrocarbons in times of tectonic unrest is heightened by the fact that oil beds lie at low depths. At Yabase in Akita the depth is 20 m, at Niitsu in Niigata it is 70 m (Geology... 1961: 253, 256).

The earliest documented oil procurement in Japan is mentioned in *Nihon Shoki* (The *Cronicles of Japan*), a classical Japanese history manuscript dated to 720 AD. This book's XXVIIth scroll contains the following text: "The land of Koshi presented the flammable earth and the flammable water" (*Nihon Shoki* 1997: 200). The quoted phrase describes the gifts to the emperor's court in 668 AD during the rule of Emperor Tenji or Tenchi, i.e. even before the time of Bohai State.

According to annotator A.N. Mescheryakov, "flammable earth" (*moyuru tsugi*) means coal, while "flammable water" (*moyuru mizu*) means petroleum

(ibid: 358). ” There also are some alternative opinions about the term “flammable earth”. To name one, A. A. Korshak surmises that the term refers to either oil shale or some oil-drenched solids (Korshak 2010: 86). Most probably “the flammable earth” means natural bitumen. The latter is known to have been procured and used in northeastern Japan since the Neolithic (Deryugin 2014).

Historically, in VIIth century the land of Koshi became a province on the shore of Sea of Japan comprising some part of Shonai district, now in Yamagata Pref., up to Tsuruga city in Fukui Pref. (not including the island of Sado). After the VIIIth century Koshi transformed into Etchu, Noto, Kaga, Echizen, and Echigo provinces. At present, Echigo together with Sado island constitute the Niigata Prefecture, and that is exactly where the most prominent Japanese oil-field is located.

There is no indisputable opinion about a particular hydrocarbons procurement site from which the natural bitumen samples presented to the emperor could have originated. Yet the most relevant seems to be an oilfield at Kurokawa (present-day Tainai city), Niigata Pref. Sometimes indicative of surface outlets of crude oil are olden toponyms implying repulsive odor. Thus many localities in Tohoku and Hokuriku retain such wording as “kusoju” (smelly water) or “kusodo” (smelly ground). Such terms for petroleum and natural bitumens were commonplace in XII-XVI centuries.

So far no one could precisely describe the ancient technique of oil procurement in Niigata. The Japanese did indeed borrow numerous technologies from China virtually in all trades of life, and the Chinese in Sichuan knew how to drill for salt as early as in IInd century (Zhang Geng et al. 1958: 6-7). However, no evidence of adopting such drilling skills by the Japanese for the task of extracting oil has ever been found on the Islands. Digging of holes or wells for the purpose also hasn't been substantiated by archaeological evidence as yet. Unfortunately, if ancient oilmen collected petroleum from natural outlets on the surface of the ground, no traces of such activity could stay preserved.

Since as early as the Neolithic the Japanese islanders used, as exchange commodity, natural bitumens along with obsidian, amber, jade, and Conidae shells. There is a high possibility that crude oil was also in the list. The common belief is that bitumens in the role of “currency” could travel the distances as long as 200 km off of places of procurement (Kobayashi 2004: 59-60). Trade routes usually went down the river arteries to the Pacific shores as well as by sea along the Sea of Japan's shores. Hence the theoretical possibility of transporting hydrocarbon products across sea as far away as to the mainland shores of Sea of Japan.

Sea trade has its benefits against conventional routes: bigger possible freights, and less risk of pillaging (a very common crime at the time). Maritime transportation of oil is known to have been practiced in other regions of the world in the antiquity, for instance, across the Black Sea in the 4th century ad, as we know from the occurrence of amphora on the east shore of Taman bay near Stanitsa Sennaya village. The amphora contained oil from Kerch Peninsula (Lisichkin 1954: 15).

To conclude, we must repeat that in this article we've presented the concept of delivering crude oil products from Japanese islands to mainland regions only as a hypothesis, yet one we consider very viable. Unfortunately, at this stage of research it remains very challenging to tie the hydrocarbon samples from Kraskinskoye site (presumably a substance used for illuminating dwellings) to a specific source. However, there is a good chance to have the problem solved if

we continue the research in cooperation with all the countries involved, particularly with a nation as informationally isolated as DPRK.

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ЯПОНИЯ КАК ВОЗМОЖНЫЙ ПОСТАВЩИК НЕФТИ НА МАТЕРИК В РАННЕМ СРЕДНЕВЕКОВЬЕ

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Обнаружение в Приморье на Краскинском городище (территория существовавшего в VIII – первой половине X в. государства Бохай) фрагментов сосуда с остатками битуминизированной нефти позволяет по-новому взглянуть на использование углеводородов в хозяйстве раннесредневековых государств Дальнего Востока. В данном случае наиболее вероятным представляется использование нефти как горючего для светильников.

Проблемным остаётся вопрос, где находились месторождения, откуда поставлялась нефть. В качестве одного из возможных районов рассматриваются нефтегазоносные провинции северо-западного побережья Японских островов – уникальная местность Северо-Востока Азии, где повышенная тектоническая активность разрушает нефтяные залежи, приводя к возникновению поверхностных проявлений природных углеводородов. Именно подобные естественные выходы и стали первыми источниками нефтепромысла в истории человечества.

На Хонсю в нефтегазоносных провинциях Акита и Ниигата нефтяные месторождения тяготеют к низменностям со стороны Японского моря. Здесь известны многочисленные поверхностные проявления нефти. Вероятность периодического формирования поверхностных выходов нефти на этих территориях в моменты сейсмических напряжений обусловлена незначительной глубиной залегания продуктивных нефтегоризонтов.

Основной причиной особого внимания к нефтегазовым месторождениям острова Хонсю послужил тот факт, что Краскинское городище являлось бохайским административным центром округа Янь, через который осуществлялись посольские связи с Японией в VII–X веках. Естественно, что в составе посольских миссий были и торговцы. Бохайские миссии прибывали на Японские острова через порты исторической области Коси, северные территории которой достаточно богаты поверхностными проявлениями нефти. Этот исторический факт, относящийся к 668 году, нашёл отражение в японских летописях.

Ключевые слова: Приморье, Японский архипелаг, государство Бохай, Краскинское городище, нефть, месторождения нефти.