The White Jade from the Vitim Mountains in Eastern Siberia

1. Introduction

White Nephrite Jade is found in sizable quantities only in Asia, with the most prominent places being the Kun-Lun Mountain and River sites in the Xinjiang Province of China, the Wolgok-ri Talcum mine site near Chuncheon in the Gangwon Province of South Korea and the lesser known sites in the Vitim River Highland east of Lake Baikal in the Autonomous Republic of Buryatia of the Russian Federation.

In 1995 I had the opportunity to meet personally the discoverers of the Vitim White Jade sites Dr. Alexander and Dr. Nina Sekerin, visit Irkutsk and Lake Baikal, gather geological information on the deposits and last but not least, get some very nice specimens of river pebbles and mined material.

All this information was ready to be published in the “old” FOJ bulletin but then it did not make it through the presses. I have now complemented this material with actual information and satellite imagery and take the opportunity to publish it now for on our FOJ homepage.

2. Let’s travel to the Vitim Highland!

The White Nephrite deposits are located in an extremely remote area of Siberia to the east of Lake Baikal with no access by road and with the nearest settlement about 80Km away. If you search for them on maps, then look for an area around 55°08´N and 115°03´E with the rivers Tsipa and Vitim delimitating the sites West and East. Here some hints how you might reach the Kevekte, Burom and Golyube Jade sites.

A The route to the White Jade sites in the Vitim Highland

The most scenic approach to the sites is starting in Irkutsk. This town traces its roots to Fort Irkutsk, build in 1661 on the banks of the Angara River.

Irkutsk became quickly the point of origin of the trade roads to the riches of Eastern Siberia and, via Mongolia over the Tea Road, to the Chinese Empire. The town was the last civilized outpost before the Siberian Emptiness and a preferred place of forced exile the farthest away as possible from the Tsars in St.Petersburg and Moscow. Many of these political exiles, such as the members of the failed coup of December 1825, the Decembrist, where banned quite often together with their families. This flow of exiled intelligentsia brought incidentally, science, art and culture very early to Irkutsk and allowed it to claim to be the Paris of Siberia. You probably also read Jules Verne’s book "The Courier of the Tsar", describing Michael Strogoff’s epic travel in a secret mission to Irkutsk.
The Trans Siberian Railway reached Irkutsk 1898 and, with the damming of the Angara in 1950, Irkutsk entered the heavy industry period of its history. The city has about 580,000 inhabitants (www.icc.ru) and is 5 time zones ahead of Moscow.

If you decide to fly to Irkutsk, then you can take the daily 757 of Transaero Airlines from Frankfurt, Germany leaving 15:00 and arriving at 20:00 local time at Domodedovo/Moscow. The flight continues two hours later for Irkutsk, arriving at 8:40 in the morning next day.

When you land in Irkutsk, look out for various examples of Russian Military Aircrafts “rusting” at the airport. Most of these are from the Irkutskoye Aviatsionnoye Proizvodstvennoye Obedinenie, a production plant of the famous Sukhoi Aircraft Company nearby.

If you have plenty of time, hate jet lag and want to travel in style, then take the Trans-Siberian Express Train Nr 4 for Beijing at Yaroslavsky Station in Moscow. You will be leaving on Mondays at 22:03 in a private deluxe cabin with shower (465US$ one-way to Beijing) and reach Irkutsk 5153Km or 3 days, 3 hours and 17 minutes or countless tadam-tadam later.
During my visit to Irkutsk I stayed in the Intertourist Baikal Hotel on Gagarina Boulevard right on the Angara River. Since then new hotels have been built and there you might not be asked by the Floor Supervising Lady to show that you left all the towels in the bathroom when you check out!

Hotel Intertourist Baikal on the Angara River front in Irkutsk

For those which have a deep interest in Siberian geology, the best contact in this matter is the Institute of the Earth's Crust of the Siberian Division of Russian Academy of Sciences, 128 Lermontov Street, 664033 Irkutsk, Russia, Tel. (3952)465-496, Fax (3952)462-900 and homepage http://www.crust.irk.ru. It is the local centre of Nephrite Jade Science and Geology and the discoverers of the Vitim Nephrite sites were working as scientists there. A possible contact is Dr. Eugene Sklyarow, Head of the Department of Geology. (skl@gpg.crust.irk.ru) which I personally meet when subsequently visited me in Switzerland.

After having adapted to the new environment and completed the last preparations, you will now proceed to Siberia proper.

As the sites in the Vitim Highland can be reached in reasonable time in summer only via helicopter and in winter via truck along frozen rivers, you have to travel first to Taksimo, a rail town located on the Baikal-Amur (BAM) Railway Line about 320Km east of the northern tip of Lake Baikal.

For this you will take the hydrofoil boat Voskhod, at the Raketa Terminal in the Solnetschny part of Irkutsk, at 8:50 in the morning and, after a trip of about 55Km, reach Port Baikal just were the Angara leaves Lake Baikal and opposite to the small town of Lystvianka.

Here you are now on Lake Baikal, the largest freshwater lake on Earth containing 23000 cubic Kilometres of water, or roughly 20 percent of the world's total surface fresh water! It contains as much fresh water as the Great Lakes of North America combined. With over 1,700 meters, it is the deepest lake in the world and at
perhaps more than 25 million years old, the oldest as well. The water of Lake Baikal is highly oxygenated all the way to its bottom and so clean that you can drink it right away without additional purification. It contains a unique aquatic fauna and flora and harbours the world’s only lake colony of seals, the Nerpa.

After a small snack on the pier, of the famous smoked Baikal fish, the Omul and a gulp of Vodka, you switch from the smaller Voskhod boat to the larger Kometa Hydrofoil and about 10h or 600Km later you reach in the evening Severobaikalsk at 55°38’58”N and 109°19’16”E near the northern tip of lake. This is the place where the BAM railway line, coming from Moscow and Tajschet, reaches the shore of Lake Baikal on its way to the terminal either in Sovetskaya Gavan on the Pacific or in Komsomolz on the Amur River.

The Kometa Hydrofoil on its way to Severobaikalsk and Babushkas smoking and selling the delicious Omul on the pier
Lake Baikal is a so called Rift Lake with a length of 636Km and about 48Km wide in average. Its existence is made possible by an active fracture at the boundary between the Eurasian and the Amur Tectonic Plate. This fracture opened up about 25 million years ago and is widening at about 6mm/year in NW-SE direction. Due this continuous extension more volume is available each year for lake sediment and instead of having been filled up already and transformed into another forested Siberian landscape; over 5000m of sediment have accumulated on its bottom and still maintaining a water depth of more than 1700m! Why this fracture opened up is still hotly debated with one explanation being offered is that it is an after-effect of the Indian Plate impacting on the Eurasian one and forming the Himalayas. The other explanation is that a rising plume of magma from the earth interior causes local crustal thinning and stretching thus reactivating old faults and plate junctions.

On all sides the Baikal hollow is surrounded by mountains. On the western shore the lake is closely rimmed by the Primorsky and Baikalsky Ranges, with their maximum height of 2678 metres. On the eastern side, Baikal is fringed by the Barguzinsky and Ulan-Burgasy Ranges, and in the south and south-east by the Khamar-Daban Range, with its summit named Munku-Sardyk (eternally snowy) reaching 3491 metres above sea level.

Some views of the shores of Lake Baikal (www.baikaltravel.ru)
You disembark in the small port of Severobaikalsk, the railroad center on the northern edge of the lake. This is a town of about 28,000 inhabitants and was founded in 1974 to support the building of the BAM railway line.

Here you pass the night in the Podlemorye Hotel, owned by the Eastern Russian Railways and wait for the Number 76 train from Moscow leaving at 13:50 for Tynda and stopping in Taksimo 412Km further to the East.

Severobaikalsk at 55°38’58”N and 109°19’16”E with the BAM railway yard and Kometa jetty

Severobaikalsk railway station and waiting for the train Number 76 to Taksimo

The BAM railway line to Taksimo crosses the Severo-Mujskij mountain range and passes through the longest railway tunnel of Russia. The building of this epic tunnel, with a length of 15.3Km, took more than 20 years and was marred by numerous geological incidents such as earthquakes, flooding, rockslides and extreme difficult working conditions. It finally opened in December 2003 and cut the travel distance, by eliminating numerous turns and serpentines needed to spiral up and down the mountain, by 63Km.

Climbing the Severo- Mujskij range on the BAM via the Devils Bridge and descending to Taksimo
Taksimo at 56°21´00”N and 114°51´32”E with the railway station and the airport north-east of the town

The last leg of the trip to the White Jade sites, about 130Km south-east, will start here in Taksimo. Waiting for clear weather and the availability of the work horse of Siberia, the irreplaceable Mil 8 helicopter, you stay in the Hotel Riviera and explore this railway town and nearby hot springs.

Hotel Riviera in Taksimo and the Tupolev ANT4 monument

The Tupolev ANT4 monument near the railway station is a landmark of Taksimo. This airplane was the first all-metal plane build by Tupolev in the 30’s as bomber and was utilized, in its present amphibian version, to cartograph the area of the future BAM trace. The plane went missing in July 1940 and was discovered by chance only in 1970 at the bottom of Lake Barancheyevskoye at the eastern outskirts of the town. Local aviation buffs restored it in their time off from the BAM railway construction duty.

The helicopter you will take for the last leg of the trip is the famous MIL 8 helicopter without which nothing could be built, re-supplied or transported in the Siberian Outback. This twin-engine helicopter has a payload capability of 4000Kg, a range of 460Km and flies, with a crew of two, at a maximum speed of 225Km/h.

The flight route takes you south-west across Juzno-Mujskij mountains of the Stanovoy range, skirting mountains towering at 2400m and then, after about 1h of flight, lands at the Kevekte (Kavoktinskoe) Jade site at 55°08´01”N and 115°03´31”E.

The MIL 8 helicopter – the workhorse of Siberia and a flight route from Taksimo south to Kevekte
The mountainous area south of Taksimo experiences numerous heavy earthquakes (>5.0) as it is the region where the ripping-open of the Baikal Rift continues eastwards. This area, now stretching and straining, has been once the southern shoreline of the Siberian Plate before it collided with Laurentia (now North America) about 1 Mla years ago resulting in the formation of the Rodinia super continent. Rodinia broke then up again about 300 Mio years later forming Laurasia. The western shore of what is now Lake Baikal shows the associated fault lines of this first break-up. Another plate, the Amur, then migrated toward this shore and the actual Siberian/Amur land mass was formed. All these collisions and break-ups have been favourable for heavy local mineralization and certainly also for the formation of Nephrite by a carbonate-hosted hydrothermal metamorphism. Water at high temperature and pressures as also rich in silicon dioxide infiltrated the strata and triggered, in the dolomite based rocks present a set of metamorphic and metasomatic reactions resulting in the formation of Nephrite.

Landmasses forming the Rodinia Super-continent with the past and actual Vitim highland area in the red circle.

The landing in Kevekte is carried out on a raised platform made with tree logs and filled with tamped earth and rocks. This allows the up to 10 ton heavy helicopter to have a reproducible landing support and not sink in and tilt over when the normally frozen ground taws superficially in mid-summer.

Here in the upper valley of the Kevekte River, at about 950m above sea level, you are 330Km east of Lake Baikal, 430Km west from the Chinese border and 3200Km north-east of Khotan. The nearest settlement is Bambuika 85Km to the north-east at the confluence of the Bambuika and the Vitim river. The Burom (Buromskoe) site is at a distance of 26Km across the mountain ridge to the north-east. The Golyube (Golyubinsko) site is 38Km away in the same general direction.
3. The discovery of the Vitim White Jade sites

Irkutsk and the Institute of the Earth Crust (Zemnoy Kory) is the center of Russian Nephrite mining, commerce and science. Whereas in the early 17th century only the famous Apple and Spinach Green Jade deposits of the Western and Eastern Sayan Mountains were known and supplied the raw material for the jewelers of the Tsars and Emperors, newly discovered Neolithic tombs and settlements on the banks of Angara and the Lena yielded clues that White Nephrite was also to be found in the area. Information from trappers and hunters indicated that in the region east of Lake Baikal certain rivers carry Jade pebbles which, next to the traditional green colored ones, also are in a snow white color.
In 1975 M.I Grudinin, A.P Sekerin and N.V. Sekerina, geologists of the Zemnoy Kory (Earth Crust) Institute in Irkutsk, together with the state owned company Baikalkvartssamotsvety, started to follow up these leads and began to explore in detail the area between the Tsipa and the Vitim River. (See also “Nature of Nephrites of Various Color” in Soviet Geology and Geophysics 1979, Vol. 20, Pt 2, p122-124) They backtracked the Jade pebbles in the river gravel of the Tsipa, Vitim, Kevekte, Golyube, Burom and Bambuika River to suitable geological formations in the surrounding mountains and promptly discovered three major Jade mother lode sites.

Map showing sections of rivers in the Vitim Highland which carry Jade pebbles, the three Jade mother-lode sites and a magnificent sample of river pebble in Lychee White Jade and with a russet red skin.

Braided Tsipa River gravel bed with some collected White Jade pebbles
4. Geological features of and around the Vitim White Jade sites

A collection of geological information and maps are shown below.

Russian Geological Map (from Atlas of Baikal 1993) with the Vitim White Jade sites in the area marked
γPZ= Paleozoic Granite, Alkaline Syenite & Diorite
Red lines are geological faults

Russian Geological Map (from Atlas of Baikal 1993) with the Vitim White Jade sites in the area marked
γCA = Kaledonskoy Granite      Red lines are geological faults
Red line with hatching = Selenga/Vitim structure boundary
Location of the Vitim White Jade sites in relation to local Plate and the Baikal Rift boundaries

Location of the Vitim White Jade sites as also Earthquake loci and their intensities along the Baikal Rift.

Figure 10. Conceptual model for the extension of the Central Basin. Rifting of the Central Basin is confined to the upper and middle crust and probably reactivates one of the faults within the fold and thrust belt, which was accreted during the Late Proterozoic and the Paleozoic onto the Siberian Platform. The three crustal and Moho are not modified to an extent that can be detected seismically. This style of rifting can be achieved by extension on faults soling into a midcrustal detachment. Kravv et al. [1993] present a line drawing of a seismic reflection line in the upper Amur region showing a band of reflectivity extending from the upper crust and flattening at depths of 16–20 km. The locus of upper mantle extension is possibly shifted to the southeast where high topography, volcanism, and, possibly, a thin asthenosphere are observed.

Location of the Vitim White Jade sites on the conceptual model of the Baikal Rift section

The discovered rounded lumps of Nephrite or various color in braided (river gravel) deposits of the middle course of the Vitim and its tributaries (Bambuika and Tsipa) differ not only with respect to color, but also with respect to texture. They often exhibit banding caused by the alteration of fine fibrous aggregates of Tremolite with larger tubular individuals as well as light and dark bands. Some pebbles consist in a Nephrite core enclosed in a Carbonate “sleeve”. All lumps and boulders found in this region do not contain ore phenocrysts. Microscopically these rocks have no substantial differences and consist mainly of aggregates of very fine fibers of tightly interwoven Tremolite fibers. Sometime these fibers gather into unique coils, resembling the structure of a snowball. The Tremolite fibers range from 0.005 to 0.1mm. Other materials encountered in small quantity include grains of Diopside, neoformations of Zoisite and Carbonate. In some cases the fibrous mass contains relict boundaries of prismatic crystals of the same rock, after which the Nephrite was formed.

The chemical composition of the boulder Nephrites has a very low content of ore-forming oxides, as compared to Nephrites connected with ultrabasite bodies (in the Eastern Sayan’s).

### Chemical Composition of Boulder Nephrites, wt.%

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<tr>
<th>Oxide</th>
<th>V-3</th>
<th>V-4</th>
<th>Oxide</th>
<th>V-3</th>
<th>V-4</th>
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<tr>
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<tr>
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<td>Calcite</td>
<td>0.83</td>
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**Total** | **99.81** | **99.34**

Notes: V-3 is white nephrite, V-4 is dark-green nephrite of the Vitim mountains region. Analyt. T. N. Zhelenskova (ITGU).

Chemical analysis of white (V-3) and dark-green (V-4) Nephrite Jade from the Vitim
Spectral analysis in the boulder Nephrites has established 0.0057% Chromium, 0.0039% Nickel and 0.0005% Cobalt (average of 15 determinations). The Fluorine content ranges from 0.20 to 0.53% (average of 21 determinations) which sharply distinguishes the Nephrites studied from similar formations associated with Ultrabasite bodies, where this element occurs in vanishingly small amounts.

According to X-ray diffraction data, these Nephrites do not differ substantially from those associated with Ultrabasites. Thus, the variously colored Nephrites of the Vitim mountainous region differ substantially with respect to the characteristics indicated above from the known aposerpentinite (originated from Serpentine) Nephrites. Judging by the geological structure of the region where these Nephrite boulders are found, no Ultrabasite bodies are found. This characteristic was noted by Dzevanonvskii who discovered pebbles of a similar rock in the basis of the Kalar River (right tributary of the Vitim) already in 1946. Moreover, in this region altered Magnesial Carbonate (Dolomite) formations are highly developed, and at their contact with Granitoids we find processes of Dolomite Tremolitization.

Based on the material presented above we assume that the investigated Nephrite, encountered in the middle course of the Vitim River, is formed not in ultrabasite bodies, as in the most known such deposits, but is connected with metasomatic transformation of Carbonate rock series in contact with Granitoids or other intrusive rocks which are more acid than Ultrabasites. Nephrite of this type has been described by Protod’yaknova and Mansurov in 1973 in a study of near-ore dolomites in the Kuruman Mountains (Uzbekistan), where it is encountered in Magnesial Carbonate rocks in the form of thin lens-like discontinuous bodies. In terms of chemical composition, particularly with respect to the content of Fluorine, it is similar to the previously described Nephrites.

This interpretation for the genesis of the Nephrite boulders of various colors encountered in the Middle Vitim mountainous region has great theoretical and applied significance. The wide distribution of Nephrite of various colors in the Vitim basin and its large tributaries provides a base for the assumption about the existence of a new, still undiscovered Nephrite bearing province, evidently of a completely different genetic type…….."

After this introduction to the Vitim Nephrites of apocarbonate (from Carbonate rocks) origin, as opposed to the aposerpentinite (from Serpentine rock) origin of Nephrite in the Sayan Mountains, the Sekerin’s present their investigations in several papers such as “Conditions of Localization of Deposits of Apocarbonate Nephrite in the Middle-Vitim Mountain Country” in Soviet Geology and Geophysics 1988, Vol. 29, Pt 11 p. 96-101, “Petrology of Granites in Deposits of Light-Colored Nephrite in the Central Vitim Highland Country” in Soviet Geology and Geophysics 1986 Vol. 27 Pt 121, p34-40 and “Genetic characteristics of light colored Nephrites of the Central Vitim Mountain Country” in Dokl. AN SSSR, vol. 284, no.1, pp.193-196, 1985, and which are too long to reproduce here in full text.

I have extracted from these papers however the relevant maps and sketches of the Mountain Nephrite deposits together with the legend of associated rock formations.
Sketch of the geology of the Burom deposit in Sekerin’s paper and its satellite image next to it

Sketch of the geology of the Golyube deposit in Sekerin’s paper

Sketch of the geology of the Nr. 5 Nephrite deposit of unknown location in Sekerin’s paper
5. The Mountain Jade mining sites and their location

The mineral rights of the Nephrite sites are owned by local indigenous people, the Evenks or as they call themselves, the Orochen. They have struck, since the early 90’s and the demise of the Soviet Union and the state owned company Baikalkvartssamotsvety, several extraction alliances with different persons and companies. The latest information indicates that Russian "Biznisms" and Korean/Chinese Capital are now calling the shots. The Koreans are particularly interested in the White Siberian Jade because it resembles closely to the Wolgok-ri Nephrite Jade and to which all kinds of therapeutic values are ascribed. A famous Korean Jade Artist, Mr. Jang Ju-won is making reference to the use of Vitim Jade for his work. [http://www.antiquealive.com/masters/m08/master08_view3.html](http://www.antiquealive.com/masters/m08/master08_view3.html)

Korean made Jade pillow and mattress incorporating White Jade.

The information about localisation of the Jade extraction sites has been given to my by Dr. Alexander Sekerin few years ago and I have been able to spot and confirm them on the satellite images as shown below (via Google Earth).
5.1 The Kevekte (Kavoktinskoe) Jade mining site

The site is located in the upper valley of the Kevekte River at 55°08′01″N and 115°03′31″E and at an altitude of about 900m surrounded by mountains peaking at about 1500m.
The extraction of Jade occurs during two to three months in summer time mostly by brute force (dynamite) and the material is then transported, in wintertime, over the frozen river to storage areas/warehouses near Ulan Ude in the south or to the BAM railway line in the north. The trip to the BAM entails about 180Km of travel over the frozen Kevekte, Tsipa and Vitim Rivers.

5.2 The Burom (Buromskoe) Site

The site is located 26Km north of the Kevekte site near the very end of the valley of the Burom River at 55°21′48″N and 115°00′12″E and at an altitude of about 1500m and about 1950m surrounded by mountains peaking at about 2200m.
The nearest settlement is Bambuika and truck transport of Jade to this village goes, in the winter, for about 85Km over the frozen rivers. The Burom River joins the Bambuika River which itself merges with the Vitim River near Bambuika.

5.3 The Golyube (Golyubinskoe) Site

The site, the smallest of the three in terms of visible activity, is located 20Km north-east of the Burom site in a small side valley of the Golyube River at 55°27´32”N and 115°14´47”E and at an altitude of about 1000m surrounded by mountains peaking at about 1500m.

Satellite image of the Golyube site with a place of mining (green arrow) at about 1500m near the mountain top. This mining site is revealed by paths leading to it from the logistic and housing activity site on the slope below.

6. The Vitim White Jade

The white Nephrite of the Vitim Highland is found as seams up to 50cm thick with conspicuous native fractures. The “Lychee Flesh” to “Mutton Fat” White Jade changes slowly (?) from the vein surface and along fractures, into a “Café-au-Lait” or “Brown Sugar” colored Jade.

![Typical Jade](image)

Typical, 25cm long Vitim Mountain Nephrite Jade piece with weathering zones and the white virgin core. Except for the very outer skin all other parts are equally hard and can be polished to the same lustre.
Detail of the weathering skin of the Vitim Mountain Nephrite with a sequence of chicken-bone, bleached, brown sugar and the original white colored Jade in the center.

Typical aspect of Vitim Mountain Jade pieces when presented for sale.

The “White” Jade offered for sale has a color that ranges from “Lychee Flesh White” to a “Greyish Dirty White” with more or less amounts of brown alteration areas. The actual price for a 4.8Kg piece, as offered on a Russian Homepage (www.nephrit.ru), amounts to 30US$ per Kg which can be considered quite reasonable for White Jade.

Vitim Highland River Jade pebbles are also available on this homepage with the prices ranging from 30 to 80US$ per Kg.
Other examples of Vitim Mountain Jade showing the brown staining of fractures in a raw slab piece and in a polished 115mm diameter sphere offered for sale on the internet by www.jewelry-boxes-etc.com.

Whereas an adroit exploitation of the brown weathering zones can increase the artistic tension of a carved piece, their presence and their particular color make the Vitim Jade quite recognizable when it is used to make "Chinese" Jade sculptures.

Vitim White Jade used to make a Chinese Bi of 21cm diameter shown in oblique transmitted light and under direct illumination.

The brown color, which develops in the Vitim White Jade during the in-situ weathering in the rock formation, is quite distinct from the color acquired from a sojourn in rivers. The in-situ weathering brown color is duller than when staining occurred in a river but nevertheless this brown Jade is very much appreciated by the Koreans for its supposed medical virtues.
Comparison of the “brown” color of “in-situ” (left) and “river” stained (right) Vitim White Jade pebbles. The river stain is much more russet red and normally only skin deep.

Pendant in Vitim White Mountain Jade (left) and a natural shaped Vitim White River Jade pebble (right)

Vitim White River Jade pebble fully penetrated by the natural “red” river pigment. The right image shows the cut-off bottom and the penetration paths of the staining agent (iron compounds?)
7. Sculpted pieces in Vitim White Jade

The access to Vitim White Jade is not an easy one and only few artists outside Russia have worked with this material.

Few years ago, during my visit to Irkutsk, I met Arkadiy and Nataly Lodyanovi, two locally well known Jade sculptors specializing in Jade jewellery. They showed me some of their masterpieces which I want to share with you.

Arkadiy and Nataly Lodyanovi in their Irkutsk workshop

Broche “Autumn Leaves” and powder box “Forest Flowers” in White Jade from the Vitim Highland
“Cross” and “Necklace and Ring” in Green Eastern Sayan Jade

“Ladies Delight” Bracelet, Earrings and Broche in Green Eastern Sayan Jade

Our Fellow FOJ Member Deborah Wilson has also produced some jewellery items in Vitim Material which she acquired years ago from Kirk Makepeace of Jade West in South Surrey, Vancouver.

Hearth and Fan shaped pendant carved in Vitim White Jade by fellow FOJ Deborah Wilson of Vancouver.
Vitim Jade piece 36x34x5mm sold by Amy O’Connell Rockshop on the internet for 78$

Acknowledgements

I want to thank Sasha, Nina, Arkadiy and Nataly of Irkutsk and all other mentioned persons as also the internet community at large, for the bits of information, documents and pictures made available to me.

H.Giess September 2005