Field trip 2

The Kondyor clinopyroxenite-dunite massif and related platinum placers, Aldan Shield, Siberian Craton

Duration: 6 days, August 3-8, 2014
Period: pre-symposium field trip
Maximum number of participants: 13
Organiser: Vladimir S. Prikhod’ko (vladimir@itig.as.khb.ru)
Estimated Cost: 800 Euro

The cost includes only price on flight tickets from Khabarovsk to Markuel (small airport in the Aldan shield) and back. All other expenses for transport, accommodation and meal will be covered by Amur Mining Company.

General Information. The Kondyor massif is a zoned ultramafic complex (57°36’ N and 134°37’ E, Figs. 1 and 2), situated more than 1000 km to the north of Khabarovsk in the southeastern part of the Siberian craton (in the eastern part of the Aldan Shield). It has a round crater-like shape of about 6 km in diameter, which looks fantastically from the plane or satellite (fig. 1).

Fig. 1. Satellite images of the Konder crater-like clinopyroxenite-dunite massif, Aldan shield.

The massif as a high-temperature semi-solid diapir intrudes of Archean basement and Late Proterozoic (Riphean) terrigenous-carbonaceous rocks of the Enninsk and Omninsk suites, forming a domelike structure about 12 km in diameter.

Fig. 2. Schematic geological map of the Kondyor massif (after Malitch & Thalhammer, 2002).

In the contact zone metasedimentary rocks are transformed in hornfels dipping away from the massif. These metamorphic rocks form ring-like ridge which encircles the central ultramafic core. Dunite is a dominant rock and occupies the central part of ultramafic body (fig. 2). It consists of forsterite olivine and accessory chromian spinel and usually has coarser-grained texture. Dunite-pegmatites irregular bodies take place among the coarser-grained rocks.
Towards to external zone in the contact with pyroxenite, dunite becomes fine-grained and iron rich (Fo78–88). Dunite is surrounded by an irregular, 100-750m wide, complex rim of wehrlites and olivine-magnetite-amphibole (-plagioclase) clinopyroxenites and melanogabbro in the outer zone.

In the western and south-western part of the core, dunite is cut by an intrusion and stockwork of fine-, to very coarse grained apatite-titanomagnetite-rich clinopyroxenite and by veins and dikes of hornblendite, nepheline syenite pegmatite and rare by granite (fig. 3).

Dunite contains schlieren and lenticular bodies of chromitite of different size, from several centimeters up to several meters in length and of variable thickness (fig. 4). Often such chromitite comprises rich PGE mineralization which looks like as a cement of the ore chromian spinel (fig. 5).

As is assumed such chromitites are the main source of the huge platinum placer related with the Kondyor clinopyroxenite-dunite massif. But the long and complex magmatic history of its development supposes an existence of the different genetic types of PGE mineralization which all give an own contribution in the
placer resources.

Fig. 6. Platinum panning in the Urgalan placer, Kondyor area.

The Kondyor placer was discovered in 1979-1988 by Ayano-Maysk Prospecting Venture, which carried out all stages of the prospecting works. Prospecting resources in placers of the Kondyor River were stated to amount over 50 tons of platinum, i.e. the placer falls into category of the unique ones (Orlov, 1991; Placer Deposits..., 1997). The placer at the Konder River now is almost finished and the mining is continuing in the downstream about 25 km from Kondyor massif along the Urgolan River (fig. 6). The total resources of the placer have been increased. The annual production of platinum during the last years is more than 3 tons.

General view on the central part of the Kondyor massif within the ring-ridge. The placer along the Kondyor River and its tributaries.

Logistics and Preliminary Schedule:

Area at Kondyor has a continental climate. Daytime temperatures in early August are about +20-25°C, and +10-15°C at night; light rain is possible.

August 2, 2014 – Arrival to Khabarovsk.
August 3, 2014 – Flight from Khabarovsk to Mar-Kyuel (about three hours on the Antonov-26 airplane). Dinner. Transfer by car (about five hours) to the Urgalan or Kondyor village.
August 4-6, 2014 – The familiarity with the Konder clinopyroxenite-dunite massif, different rocks, PGM-rich chromitites, their geological relationships and mineralogy. Visit to platinum placers and concentrating factory.

August 7, 2014 – Transfer by car (about five hours) to the Mar-Kyuel. Sauna. Dinner.

August 8, 2014 – Flight from Mar-Kyuel to Khabarovsk.

August 9, 2014 – Flight from Khabarovsk to Yekaterinburg.

Terms and Conditions:
1. Participation will be confirmed on receipt of payment.
2. Preference will be given to registered IPS delegates.
3. Cancellations must be received in writing to e-mail: vladimir@itig.as.khb.ru
4. Any refunds issued will be subject to approval by the organizing committee.
5. Cancellations received before April 30, 2014 will receive a 100% refund minus a banking fee.
6. Cancellations received between April 30 and May 31, 2014 will receive a 50% refund minus a banking fee.
7. No refunds will be issued after May 31, 2014.
8. In the event that the trip is cancelled by the organizers, a full refund will be issued.
9. All participants should have their own personal insurance cover for general travel insurance, personal liability, medical cover and dangerous activities cover. A copy of confirmation of insurance must be submitted to the organizers prior to participating in the field trip.