



Oleg Suprunenko is Deputy Director of the *All-Russia Research Institute of Geology and Mineral Resources of the World Ocean*.

Photo: Therese S. Lakken

Exploring the Arctic Frontiers

Facing the Arctic frontiers requires a special skill. Oleg Suprunenko has spent most of his life exploring the high-latitude Russian shelf and Arctic Ocean.

Therese S. Løkken

"A living encyclopaedia of the geology of the Arctic, and a true gentleman." These are some of the typical accolades given by his colleagues in the international geological community.

Deputy director of the *All-Russia Research Institute of Geology and Mineral Resources of the World Ocean (VNIIOkeangeologia)*, Oleg Suprunenko, has always had a special interest in the Arctic in general, and the East Arctic Seas and the deep Arctic Ocean in particular. It is not surprising, therefore, that he has strong opinions on the hydrocarbon potential of the Arctic sedimentary basins.

"The Russian Arctic shelf may contain vast amounts of hydrocarbons, but exploration is still at an early stage," he says. "Remember, only four wells have been drilled in the Kara Sea, and in the Laptev Sea the only information is from a few scattered seismic lines. The current estimates of

the petroleum potential of these enormous areas are thus very uncertain. This calls for increased exploration activities in these large frontier areas".

Priority areas of research

The years he spent in Kamchatka in the 1970's and 80's are what Suprunenko describes as the "Golden era of Soviet/Russian geology. The government were investing heavily in geological research and exploration, and many of the important hydrocarbon and metallogenic discoveries were made during these years. The slogan was: 'If it's important, it's available.' Geoscience was popular among students, recruitment was not a problem, and the research institutions were expanding. "I am proud to have been a part of this geological golden era," Oleg says.

Things appear to be very different now. "Our research currently focuses mainly on the Arctic Shelf", Suprunenko explains. "We

also have a mission to supervise oil and gas exploration all over the Russian continental shelf, including resource assessments, licensing, and the development of both short and long term plans".

When asked about the petroleum potential of the Russian Arctic Shelf, Suprunenko points to the overview published in 'Oil and Gas of Russia' (2005, No. 3). "The large potential of the Timan-Pechora area and the eastern Barents Sea is already well proven", he says. "There is also a considerable upside potential in the Kara and Laptev Seas, but proper assessments cannot be done until more data becomes available".

Gas is expected to be the main resource, but it is thought that large amounts of oil may be found in Palaeozoic deposits in the Timan-Pechora region and in the Eastern Barents Sea (i.e. the western flanks of Novaya Zemlya). Suprunenko considers the Gakkel Ridge, the area north of the Wrangler Island, and the area around the Lena ▶



Delta to be of special interest.

According to Suprunenko, we will see increased activity in the Pechora area in the coming years, where the Russian company Gazprom already plays a leading role. He believes that the large fields already discovered in the Eastern Barents Sea (including the Shtokmanoskoye field) will be next on the priority list, before eyes turn eastwards towards the Laptev Sea. As already mentioned, the potential is enormous. One of the possible fields in the Kara Sea may contain up to 500 billion m³ (15 Tcf) of gas, while there are fields in the Yamal area holding as much as 3-5 trillion m³ (85-140 Tcf) of gas. Large areas are already licensed, and the big companies therefore have "the privilege of not having to rush."

There are major challenges linked to the exploration and exploitation of these large, high risk, high cost frontier areas. "The harsh natural conditions of the Arctic seas are the main challenge", Suprunenko says, "making it difficult to obtain sufficient high quality geological data".

Resistance to Explore

"We lack vessels that can operate under these tough, and sometimes extreme, conditions. The ice is, of course, the main problem. On the shallow shelf in the eastern seas the ice nearly reaches the seabed, and it frequently builds up to great thicknesses", Suprunenko continues. "All technical operations, like drilling and building pipelines, represent major challenges."

"Another problem is the government's reluctance to carry out new exploration. There has been virtually no new activity since the early 1990's. No stratigraphic wells have been drilled and only limited seismic data has been acquired. VNIIOkeangeologi has suggested for a long time the need for new potential field data from the Lena Del-

ta and in the Laptev Sea. It is also important to acquire seismic data in this interesting area. "Some oil companies have data, but only for internal use. We have no right to distribute it," Suprunenko explains.

So far, no government funding has been granted for the acquisition of new exploration data. Oleg suggests that there should be closer cooperation between the industry and research institutions. "Building consortiums to deal with the high costs of data acquisition might be a fruitful way to proceed. There is some interest among the oil companies in these frontier areas, but currently the legal basis for co-operation is not fully developed.

Appreciates his Profession

In 1992, Oleg Suprunenko delivered a doctorate thesis on *Geology and oil prospect forecast of offshore sedimentary basins*. In the same year he became a Professor at the Geological Department of St. Petersburg University.

"At this University, as in most of Russia, students seem to be showing little interest in geology. Other, more 'prestigious' professions, such as law and journalism, attract young people. In addition, low student allowances mean that they have to work to finance their studies. Once they start making money, they get distracted by the advantages of the big cities, and quit studying," Oleg sighs. However, the situation seems to be improving, as seen by the increasing number of new geology students in St. Petersburg.

"Geologists are a special kind of people, who know life with all its facades. They are great humanists and authors, even if they do not write poems or novels," Oleg Suprunenko says.

Which is why he would like seeing more enthusiasts joining his own, much-loved profession. 🌟

A Dedicated Geologist

Oleg Suprunenko started his career as a field geologist in 1959 at the Kamchatka Regional Geological Institute. He was soon using his passion for careful field observations and his excellent understanding of geological processes as a basis for applied geology and the search for hydrocarbons.

Suprunenko's interest in geology was awakened in the private library belonging to the father of a close friend. After graduating from a secondary school near Moscow with excellent marks and a gold medal for his achievements, he joined the Geology department of the *I.M. Gubkin Oil Institute in Moscow*, where he became an active member of the student scientific society. Because of his geological skills, Oleg received a fairly generous student grant, a substantial part of which was used to finance field trips and excursions to key geological locations in the Urals or on Kola, in order to get a fuller understanding of the basics of geology. "Those summer days were a very romantic time in my life," he smiles, almost 50 years later.

The dedicated geologist continued to work in Kamchatka as a senior field assistant, then as head of a geological team, and later as the chief geologist of a geophysical team. In 1965, he took a position as a post-graduate student at the *All-Russian Geological Research Institute (VSEGEI)* in St. Petersburg.

"It is important to do active research and continue to develop your knowledge as a geoscientist", Oleg says about his reasons for moving to St. Petersburg and *VSEGEI*. After finishing his thesis on "The geology of the central part of East Kamchatka", three years later, he continued his research in this region, now as a junior scientist at the *All-Russian Research Institute of Oil Prospecting (VNIGRI)*. His research took him to The Okhotsk Sea and the Northwest Pacific region.

In 1973 Suprunenko moved to the *Offshore Oil Geology division* at *VNIGRI*, where he stayed until he joined *VNIIOkeangeologia* in 1991. Since 1992 he has held positions as Head of the Arctic and World Ocean Oil and as the Gas Division Deputy Director for Science.

Suprunenko is a productive geoscientist, and he has published 250 scientific papers, including, amongst others, contributions to major collective monographs on the 'Mineral potential of the Russian shelf, 1998'; 'Geology and economic minerals of Russia vol. 5: Arctic and Far East Seas, 2004-2005'; and 'Mineral resources of the Russian Arctic, 2007'.

