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CREATION OF AN OIL SHALE INDUSTRY IN KAZAKHSTAN MAY BECOME A REALITY

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Kazakhstan possesses large reserves of coal and oil shale. Previous estimates made by geologists for the East-Kazakhstan region (Kenderlyk Field), have forecast oil shale resources of about 4 billion tonnes, and coal of 400 million tonnes. This Field has been the object of interest for geologists for a long time, but this interest has become continually weaker. The field, however, is situated in a region difficult of access and quite far from rail and water transport.

Now the economy of the Zaisan Region urgently needs to pay more attention to exploration of the Kenderlyk Field and to complex utilization of its rich beds of coal and oil shale. This is particularly important since East Kazakhstan suffers from a sharp deficiency of solid and liquid fuels. The coal and oil shale in this Field are not yet exploited. The first steps in this direction have been made by the East-Kazakhstan Enterprise "Oblteplokommunenergo". Overburden removal operations have been started for mining coal which will be delivered to industrial markets and engineering problems are being solved of building the highway for transporting the coal by dump-trucks. The oil shale bed lies about 5-7 km from the coal deposit and its seams outcrop at the surface. So it is quite natural that utilization of oil shale also becomes a reality.

It has to be emphasized that the Government of Kazakhstan, and the President personally, are paying great attention to the questions associated with industrial use of coal and oil shale from the Kenderlyk Field.

Oil shales of this deposit have a fairly high quality. Our test experience with Kazakhstan shale, performed at Kohtla-Järve in 1961, was successful. Most of 300 ton sample tested at that time was processed in chamber ovens to produce domestic gas. Some of the sample was processed in an experimental retort (with a capacity of about 1000 kg per day) to test for the technical feasibility of producing shale oil.

Oil shale samples from two deliveries of Kazakhstan shale processed in 1961 at Kohtla-Järve had the following characteristics:

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Fischer assay oil yield T^{d}_{sK},%	8	16-19
Oil yield, organic matter basis, %	41	45-52
Heat value (bomb calorimeter), kJ/kg	7035	12900-12950

The in-situ moisture content of the shale in bed is as low as 5-6 %. Experiments and other development work that we have performed have demonstrated the technical possibility of producing both domestic gas (in chamber ovens) and oil (in vertical retorts) from oil shales of the Kenderlyk Field.

Nowadays production of domestic gas in chamber ovens has lost its feasibility (chamber ovens which were operated for this purpose at Kohtla-Järve have been closed down and dismantled). At the same time we consider the production of shale oil fully practical and justifiable. The final decision regarding its production from Kenderlyk oil shale will be made after completion of a feasibility study.

Processing of Kazakhstan oil shale in test retorts performed so far, has been successful. The oil yield amounted to 16.6 % (86 % of Fischer assay oil). The produced shale oil is paraffinic in nature and has a low sulphur content (0.4-0.5 %) which is a very important for the production of high quality liquid fuels.

The oil yield from different oil shale seams in the Kenderlyk Field changes over a broad range (8-27 % according to the former All-Union Oil Shale Research Institute in St.-Petersburg). Kazakhstan geologists have to find the best prospective areas for exploitation.

Additional tests of Kenderlyk shales will be performed at Ust-Kamenogorsk. By the end of this year, an experimental unit with a capacity of 3 tonnes of oil shale per day will be erected there to evaluate fuel production from oil shale for the industrial market. This unit has already been designed by the Oil Shale Research Institute. Having its own experimental plant will enable Kazakhstan to directly test not only oil shales but also brown and surface-mined coals. The experience has shown that some types of coals give semi-coke, which is quite valuable for the metallurgical industry. This fact is quite important for Kazakhstan.

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