Distribution of Remaining Reserves of Oil in Stratum B₂ of the Syzransko-
Zaborov Field

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Stratum B₂ is at the base of the Bobrikov horizon of the Lower Carboniferous. Reservoirs are the quartz variety. Permeability ranges from 5 to 6620 md both by area and along the section.

The pool has a single water-oil contact, which is inclined to the northeast. In the Syzran sector the water-oil contact is at -913 m, and in the Zaborov sector it is at -910 m.

The wells in this field have made water since the beginning of production. Since 1948 there has been a sharp increase in flooding, reaching 84% in the Zaborov sector and 91.3% in the Syzran sector in 1955. Then during 4-5 years the water content stabilized. During the last five years oil production has been steady with a water-oil ratio of 44.6 in the Zaborov area and 12.6 in the Syzran area as of January 1, 1974.

During the period from 1937 to 1974 there was a decrease in the area of the pool in the Syzran area by 96% and in the Zaborov area by 78%.

The field was divided into zones in order to analyze its production and to estimate remaining reserves. Four zones were recognized in the Syzran area and five in the Zaborov area. In the Syzran area the greatest reserves are concentrated in zones III and IV, where 45 and 24% of the oil-in-place has been produced. In the Zaborov area the greatest reserves are in zones I and IV, where 50 and 38% of the oil-in-place has been produced.

The current recovery factor is different for the various zones. The lowest is in zone II of the Syzran area and in zones II and IV in the Zaborov area. The highest values are found in zone 1 of both areas.

A map of distribution of reserves is given in Fig. 1.

Maximum withdrawal of liquid since production began is recorded in zone I in the Syzran and Zaborov areas (68 and 68.9%, respectively); highest values were obtained in 1951–55 at 13.5 and 16.6%, respectively. Minimum withdrawal of liquid was in zone II of the Syzran area, and all wells in this area were shut down in 1965 because they were not profitable. Total withdrawal from this zone was only 4%. In the Zaborov area in zone II during the entire period of production 2.7% of the liquid was withdrawn.

Zone III of the Syzran area had a steady liquid recovery for each five-year period at about 2.3%. Total withdrawal of liquid in this zone during the time of production was a little more than 17%.

In zone III of the Zaborov area total withdrawal of liquid has been 7.6%. The recovery during five-year periods has been from 0.98 to 1.58%.

In the Syzran area maximum remaining reserves are in zone IV and minimum in zone I. In the Zaborov area the largest reserves are in zones IV and III.