

DEVELOPING EXPLORATION ANALOGS BY EVALUATING PRODUCING FIELDS USING COMPUTER DATABASE TECHNIQUES

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The Oguz Block is located between the giant Neft Dashlari and Guneshli oil fields along the prolific Apsheron trend in the Azerbaijan sector of the Caspian Sea. Exploration prospects in the block are thought to have structural style and trapping mechanisms similar to the surrounding fields. A detailed analysis of the well data from these fields was performed to answer this structural question and in addition, provide information concerning reservoir distribution.

The Neft Dashlari Field was discovered in 1949 and began production in 1951. The field was discovered based on oil seeps from outcrops of the Productive Series. Oil is produced from 14 horizons within the Productive Series. The Balakhany X, NKP and SP are the main producing horizons. Ultimate recovery is 1.35 B bbl oil and 0.46 TCF gas of which 1.21 B bbl oil and 0.44 TCF of associated gas have been produced. Production averaged 13 TBD from 373 wells in April 1998. Oil columns in individual fault blocks greatly exceed the vertical closure.

The Guneshli field was discovered in 1979 and began production in 1980. Oil is produced from five horizons within the Productive Series. The SP and Balakhany X are the main producing horizons. Ultimate recovery is expected to be 1.3 B bbl oil and condensate plus 1.4 TCF of associated and free gas of which 0.6 B bbl (mostly oil) and 0.7 TCF gas have been produced. Average daily production in April, 1998 was 122 TBD bbl oil and condensate plus 0.2 BCF associated and free gas. The eastern part of the field has not been developed to date due to the water depth with production limited to the western shallow water area of the field. The structural style is basically a faulted anticline with oil columns generally equaling the vertical closure.

The trapping mechanism of the Neft Dashlari field had not been thoroughly investigated to date. Seismic data is not available over the Neft Dashlari Field due to the numerous production platforms, roadways and abandoned drilling platforms which make acquisition of the seismic data over the field difficult. However, extensive well and production data was available which, when made more easily accessible via a computer database, was expected to allow the preparation of structure, isopach and fault plane maps which could describe the structural trapping mechanism(s). With these maps it was thought the trapping mechanisms of Neft Dashlari and the Guneshli fields could be compared and contrasted.

A total of 1,300 wells from both fields were incorporated into the study. Included for each well were: location, deviation, formation tops, production test data, cumulative production and injection data were collected from Neft Dashlari and Guneshli field offices. An OpenWorks database was created which was available for use to geoscientists at our Dallas and Baku offices. Structure and isopach maps combining well data from both Neft Dashlari and Guneshli fields plus seismic data were prepared for key horizons. Geoscientists at both locations shared images of mapped horizons across the wide area network. The final result was a series of structural, isopach and fault plane maps with stratigraphic cross-sections which described the

trapping mechanisms for the major fault blocks in both fields providing analogs for exploration within the Oguz Block.