The Stratigraphic Correlation and the Sub-surface Structure of the Talu Sand in the Tiehchenshan Gas Field

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ABSTRACT

The reservoir of the Tiehchenshan gas field is the Talu Sand in the Talu Shale. This report is for describing the stratigraphic correlation of the Talu Shale. The isopachs of the sand beds in the reservoir were drawn. A 3D reservoir geologic model datum on the top of the Talu Shale was established.

3D surfaces of the true thickness between the tops of the sand beds and the top of the Talu Shale were used for establishing the framework of the 3D model. Then calculate the sandstone content at each depth by using the spontaneous potential (SP) values measured in each wells. The sandstone contents were then loaded into the framework as attributes at well sites. The attributes of the whole model are then calculated via interpolation method. Then the 3D reservoir geological model was established.

The result of the stratigraphic correlation show that the top of the Talu Sandstone (TT-1Aa) in well TCS17 is correlated with that of well CN3 (Chunan) and that of well PST7 (Paishatun). But in this area, there are TT-1Ay and TT-1Az sand bodies above the top of TT-1Aa sand body. The subsurface structural map on top of TT-1A, Tiehchenshan gas field, in the Subsurface Geological Report of the TCS40 Well and that currently using are not a structural surface map, but a contour map of the cover surface of these three sand bodies. At some place in the area, the cover surface is of the top of the TT-1Ay, some place, TT-1Az, and some place, TT-1Aa. There is a 7-meter thick sand body in the upper part of the Talu Sand of the well TCS17. It is named TT-1Aa by the author. Since TT-1Az and TT-1Ay sand bodies distributed locally, while TT-1Aa distributed in the whole gas field, the subsurface structural map of the top TT-1Aa is the real one of the top Talu Sand in the Tiehchenshan gas field.

The isopaches of the ten sand bodies in the Talu Sand were drawn. Accompanied by the sections in this report, it was inferred that uplifting happened around well TCS17 during the deposition of TT-1Ah, and it keep lifting until, at least, the deposition of the TT-1Ay. Besides, according to the pinches out of these sand bodies, it is inferred that the sediments had come from the North-West of these area.