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The Study of Parameters of Daqing Oilfield's Putaohua Reservoir G1 Block

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Abstract: Daqoing Oilfield Putaohua group belong to extend oil --- river delta depositional system, with the dual role of rivers and lakes is characterized by formation heterogeneity clear water distribution complex, formerly of parameters standards and core analysis and conclusions oil testing conformity bias low. To solve this problem, the use of coring, logging, oil testing, testing and other information, explore lithoelectric Law of Correspondence, optimization parameters established for the study area porosity, permeability logging interpretation model for the next oil reservoir development adjustment provide a reliable geological basis.

Keywords: the study of parameters, distribution, porosity, permeability.

INTRODUCTION

Reservoir parameters mainly refer to the rock porosity, rock permeability, oil saturation and shale content. Determining reservoir parameters there are two kinds of methods, underground coring (core analysis, sidewall cores and cuttings) or logs indirect strike. Underground coring main source rock brought to the surface when logging debris, although the method is simple, but it is difficult to determine the actual depth. Core analysis continuous sampling, the three physical parameters reliable method for determining the highest level, as is currently the most used direct measurement of petrophysical characteristics of the sampling method. However, core analysis long period, high cost, generally only use the means of individual wells [1-3]. Although electrical logging is an indirect means of petrophysical measurements, but the method of measuring cycle is short, short time to return to the logging parameters for each reaction petrophysical properties. Since wire line cost-efficiency, the project is the basic prerequisite for all drilling project. Therefore, the application of all the logging parameters of the working wells. Since logging indirect measurements, so take advantage of the establishment of logging parameters (resistivity, gamma ray, density, spontaneous potential, acoustic, etc.) characterization petrophysical properties (porosity, permeability, oil / water saturation) of formula, namely the establishment of reservoir parameters interpretation model.

Daqing Oilfield grape flower oil group for the study, the use of logging data, core data, logging data, testing data and testing data, including depth to carry out the correction, inclined correction, standardization curve data preprocessing to reduce the non-reservoir layer factors affect logging curve on reservoir influencing factors [4, 5]. Based on the above work to establish reservoir parameters interpretation models.

LOG PREPROCESSING

To ensure the reliability of the results log interpretation, well log magnitude, depth must be accurate. Computer interpretation of log data strictly in accordance with continuous sampling depth quantitative point-by-point calculation, so the single well explained, it is necessary to log and correction to ensure the accuracy of its depth and magnitude of the curve. Log data preprocessing including unit conversion, the depth of the alignment, environmental correction, slope correction, and data standardization, this paper selected depth correction and core location.

Depth correction

Depth correction for reservoir evaluation logging is significant. First, when a mismatch between the actual depth and depth log curve after digitization will lead after the modeling results will lose geological significance, especially for oil and gas reservoir evaluation thinner more critical. Secondly, different measurement curves often appear different degree of difference on depth, particularly prone to this problem deep well measurement. Between curves depth dislocation of many factors, for example, the bottom friction correcting improper, different speed and quality equipment, instruments and different wall contact state and the like. For the harmonization of the logs and the depth of each calibration curve was true formation depth logging, paper selects high vertical resolution, features obvious signs.

Core location

Drilling initiative for various reasons (such as red corrosion, wear, etc.) can not be completely removed due the length of the core, and, with the drill core and wireline systems are independent, so the two are often not exactly the same depth [6]. In order to ensure true and accurate geological significance of the core, first need to be classified as core, that is unified core depth and logging depth. The study will be core porosity and porosity data and the relevance of the strong curve (density or acoustic time) by measuring the depth of the rod drawn map, and to have the same vertical and horizontal proportions, both to find the depth error Finally, by dragging the rod, and is a trend both with the actual depth is completely consistent, that is, the depth of homing value [7].

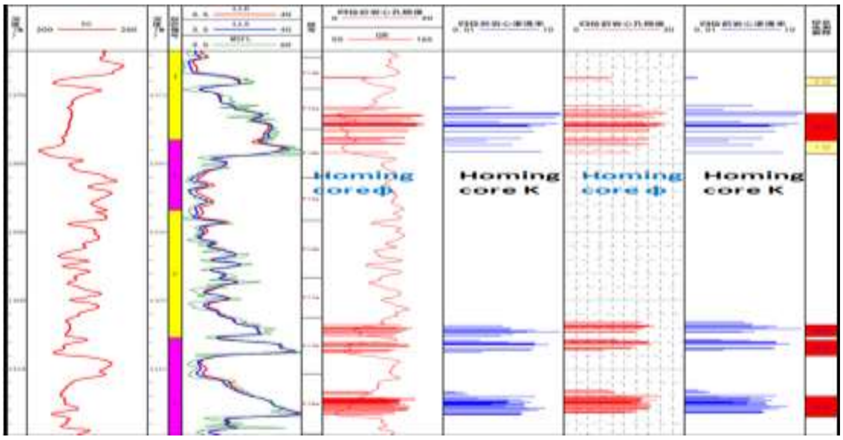

Fig-1: Pu1 of Reservoir core data set homing

POROSITY MODEL

Effective porosity reservoir calculations used include coring segment core porosity and non-cored interval of two kinds of log porosity [8]. The most commonly used porosity logging interpretation methods using acoustic travel time, neutron logs, considering one or density logs in, first with the general conduct shale natural gamma correction. Well basically because of the study area has a transit time data, so this study uses acoustictime establish effective porosity interpretation model.
Reference

After several preferably, the final Shale Correction Wyllie time average equation selected to calculate the effective porosity model formula:

$\phi = C_1 + C_2 \cdot \Delta GR + C_3 \cdot AC$, Including : $\Delta GR = (GR - GR_{min})/(GR_{max} - GR_{min})$ 。

In the study area 3 debiting core hole 88 core sample core analysis data for the foundation, through mathematical regression statistics, Good for target porosity interpretation model:
φ= 0． 00205 × AC — 0． 27752Vsh— 0． 32680

As shown by core analysis porosity and porosity logs calculate correlation analysis. 4, both the correlation coefficient is 0. 91, logging interpretation model porosity average absolute error of 1.62%, the average relative error of 7.7%.

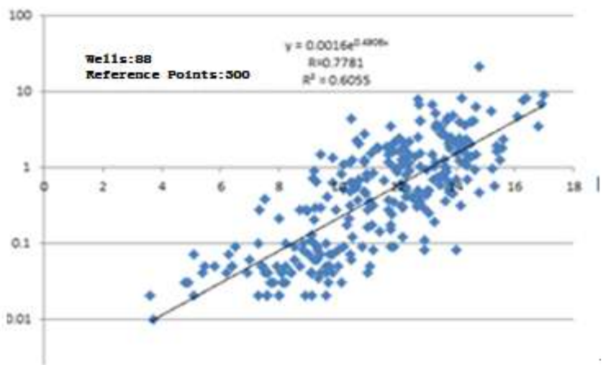

Fig-2: the Relationship of Porosity-permeability

CONCLUSIONS

(1) Reservoir Logging logging response characteristics affect many factors, combined with the status quo of the study area, this mainly analyzes the

formation water salinity and mud invasion on logging response, formation water salinity total salinity of log response the effects can be ignored, and the impact of mud invasion in post calibration curve can be corrected unity.

(2) The current situation of the study area, through a unified logging unit, the depth of the correction, core location, logs and other means of standardization, calibration of all logs.

(3) the use of a wide range of core and logging data, the purpose of establishing district Pu1 reservoir effective porosity interpretation model, the relative average relative error of 7. 77% meet the requirements of the specification reserves average relative error is less than 8%.

(4) Establishment of District permeability model relative error is 122%.

(5) Effective porosity reservoir in the study area Pu1 effective layer averages 21. 97%, consistent with the core analysis results. Daqing Oilfield Pu1 oil group genus low porosity and permeability layer.

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