

MEASURED RESISTIVITY VALUES AND CHEMICAL ANALYSES OF PRODUCED FORMATION WATERS FROM OIL AND GAS WELL TESTS IN MISSISSIPPI

by
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ABSTRACT

Published formation water resistivity values (Rws) and chemical analyses of oil-productive formations in Mississippi were last published in 1963 by the United States Department of the Interior, Bureau of Mines (Report of Investigations No. 6167). The Rw data and chemical analyses presented in that publication, long since out of print, are republished in this report along with additional Rw and chemical analyses data which has been obtained over the past thirty years of fluid production within the state of Mississippi. In addition to resistivity values and chemical analyses of produced waters from oil wells located within the state, which were restricted to the Interior Salt Basin and Wilcox Trend in Report 6167, a listing of data is also provided for formation water produced by natural gas wells located within the state.

As can be ascertained from the data presented, it is evident that there is an inherent degree of variability in the reported measured Rw values, as well as chemical composition of those formation waters, for a particular formation. With respect to Rw values, this is the result of a minimum of the following factors -

- (1) Variation of Rw with depth (generally decreasing Rw values with increasing formation depth).
- (2) Variation of Rw values by drilling fluid contamination. For example, in fresh water drilling mud, the filtrate generally has a higher resistivity than the formation water. Another example would be the invasion of waters of different Rws along a fault plane invading the formation in question.

With the republished formation water resistivity values and chemical analyses, and the additional new data provided in this report, oil and gas exploration concerns may be in the position to better evaluate DST results, measured petrophysical log responses and production tests in determining whether a particular well or formation is capable of the production of hydrocarbons. Further, the use of Rw values in a mapped format may be an invaluable tool when used as a hydrocarbon accumulation/non-accumulation indicator within an area where the Rw data are sufficient to provide adequate control.

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