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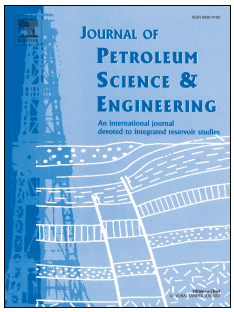

A contemporary approach to carbonate matrix acidizing

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A contemporary approach to carbonate matrix acidizing

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ABSTRACT

This study reviews the various challenges that may cause treatment failure of carbonate acidizing. Based on this review, updated guidelines for acid treatment of carbonate formations are presented in the form of decision trees that may be used for selecting pre-flush, main acid, post-flush, diversion fluid requirements, and adequate additives that lead to a successful acidizing job. The decision trees allow the user to obtain through a five-step inference process the complete recipe for customized matrix stimulation of carbonate formations. Many of the acidizing stages prove to be inter-related, and hence compatibility between all acids and mixed additives are honored in formulating guidelines for all stages. The final outcome is a selection of a fit-for-purpose acidizing fluid recipe that replicates standard field procedures and best practices. The most recent research advances, and industry reports constitute the basis for the development of the acidizing fluid recipes.

Application of this structured approach to the acidizing design of carbonate reservoirs has been illustrated through five documented field cases from the Middle East region. All of these case studies were performed before the guidelines, introduced in this study, were developed. For these examined cases, the structured approach recommended acid blend recipes in agreement with successful field treatment.

Key Words: acidizing, carbonate formations, guidelines