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The Application Of Microbial Enhanced Oil Recovery On Unconventional Oil: A Field Specific Approach

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A substantial amount of the world's recoverable oil reserves are made from unconventional or heavy resources. However, great difficulty has been had in recovering this oil after primary and secondary recovery methods have been employed. Therefore, tertiary methods such as microbial enhanced oil recovery (MEOR) have been employed. MEOR involves the use of bacteria and their metabolic products to alter the oil properties or rock permeability within a reservoir in order to promote the flow of oil. Although MEOR has been trialed in the past with mixed outcomes, its feasibility on heavier oils has not been demonstrated. The aim of this study is to show that MEOR can be successfully applied to unconventional oils. By using an indigenous strain of bacteria isolated from a reservoir of interest and applied to field specific microcosms, we will look into the effect of these bacteria compared to variant inoculums to identify which mechanisms of action the bacteria are using to improve recovery. Using this information, we will be able to identify genes of interest and groups of bacteria that may be beneficial for MEOR and look accurately identify favorable bacteria within a reservoir.