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# Field Application of Phenol Formaldehyde Gel in Oil Reservoir Matrix for Water Shut-off Purposes

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## Abstract

A few wells from a major western India on-shore oil field are either on the verge of being shut in or have already been abandoned due to excessive water-cut (WCT) levels. Low injectivity and extreme temperatures (149°C) make it difficult for water shut-off by conventional polymer gel injection. A water-thin monomer-based in situ gelation system

has been due to 1 than 1% BOPD (w in co which w post-treat producti Cheap chemicals and a fast treatment method have resulted in a payback time span of

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5 days and made an additional profit of U.S. \$0.6 M. The water shut-off job resulted in an impressive commercial success; technical success, however, was less than satisfactory due to the fact that, in spite of using a water-thin monomeric solution, only 40% of the designed volume could be injected due to low injectivity resulting in an abnormal pressure build-up. In addition to the gel development and treatment experiences, this article describes in detail the results of further lab investigations carried out to identify the possible reasons causing injection failure.

Keywords: field application gel oil reservoir phenol formaldehyde water shut-off

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