

RINGKASAN

Peningkatkan tahap tersier *recovery* minyak dengan injeksi surfaktan anionik *Sodium lignosulfonat* dipilih karena kemampuannya yang efektif dalam menurunkan IFT dan membentuk emulsi. Penelitian sebelumnya, mengenai kinerja surfaktan menyebutkan bahwa efektivitasnya dipengaruhi oleh beberapa parameter, seperti konsentrasi, temperatur dan salinitas optimum air formasi yang berperan penting dalam distribusi surfaktan pada sistem injeksi.

Penelitian ini bertujuan untuk menganalisis pengaruh konsentrasi surfaktan pada parameter optimum kondisi temperatur dan salinitas pada *recovery* minyak. Proses analisa laboratorium, diawali dengan pengukuran sifat fisik fluida dan *screening* surfaktan pada konsentrasi 1%, 1.5%, 2%, 2.5%, dan 3%, temperatur 40⁰C, 50⁰C, 70⁰C, 80⁰C, dan salinitas brine sintetis sebesar 5000 ppm, 150000 ppm, dan 20000 ppm, selanjutnya dilakukan pengukuran sifat fisik batuan yaitu, *core* sintetis berukuran 40 mesh. Pada tahap akhir *recovery* minyak di analisis, dengan menggunakan *imbibition test* dan *Core flooding test*.

Hasil penelitian menunjukkan bahwa pada kondisi optimum konsentrasi surfaktan, temperatur dan salinitas diperoleh nilai IFT sebesar 2.07 mN/m dan *recovery* minyak sebesar 72.14%. Kondisi optimum tersebut tercapai pada temperatur 50⁰C, salinitas 20.000 ppm, dan konsentrasi surfaktan anionik sodium lignosulfonat sebesar 2%.

Kata Kunci : Surfaktan Anionik *Sodium Lignosulfonat*, Temperatur, Salinitas *brine*, *Imbibition Test*, *Coreflooding Test*, *Recovery Factor*(RF)

ABSTRACT

The enhancement of tertiary stage oil recovery by injection of anionic surfactant *Sodium lignosulfonate* was chosen due to its effective ability to reduce IFT and form emulsion. Previous researches on surfactant performance mentioned that its effectiveness is influenced by several parameters, such as concentration, temperature and optimum salinity of formation water which play an important role in surfactant distribution in the injection system.

This study aims to analyze the effect of surfactant concentration on the optimum parameters of temperature and salinity conditions on *oil recovery*. The laboratory analysis process begins with the measurement of fluid physical properties and surfactant screening at concentrations of 1%, 1.5%, 2%, 2.5%, and 3%, temperatures of 40°C, 50°C, 70°C, 80°C, and *synthetic brine* salinities of 5000 ppm, 15000 ppm, and 20000 ppm, followed by measurement of rock physical properties, namely 40 mesh *synthetic cores*. In the final stage, *oil recovery* was analyzed using *imbibition test* and *core flooding test*.

The results showed that in the optimum condition of surfactant concentration, temperature and salinity, the IFT value of 2.07 mN/m and *oil recovery* of 72.14% were obtained. The optimum condition was achieved at a temperature of 50°C, salinity of 20,000 ppm, and anionic surfactant sodium lignosulfonate concentration of 2%.

Keywords : Anionic Surfactant *Sodium Lignosulfonate*, Temperature, Salinity of brine, *Imbibition Test*, *Coreflooding Test*, *Recovery Factor* (RF)