

RINGKASAN

OPTIMASI PRODUKSI DENGAN REAKTIVASI SUMUR *SHUT-IN* DAL-031 PADA LAPANGAN “LAZ”

Oleh
Dea Anfi Lazaritsa
NIM: 113190163
(Program Studi Sarjana Teknik Perminyakan)

Lapangan “LAZ” merupakan salah satu lapangan minyak tua yang berada di Kota Prabumulih, Provinsi Sumatera Selatan yang mulai berproduksi pada tahun 1947. Seiring berjalannya waktu, produksi air pada Lapangan “LAZ” akan meningkat, hingga pada akhir 2022 nilai *water cut* rata-rata lapangan mencapai 94%. Struktur “DAL” sebagai salah satu struktur tua pada Lapangan “LAZ” yang mulai berproduksi pada tahun 1949 dengan *water cut* 0% dan seiring waktu cenderung mengalami kenaikan hingga pada tahun 2022 nilai *water cut* menyentuh 97%.

Pada Struktur “DAL” Lapangan “LAZ” dilakukan kegiatan optimasi produksi yaitu perencanaan reaktivasi dimana sebagian besar sumuran memiliki tingginya nilai *water cut* (*high water cut*) dan banyak sumur *suspended/shut-in*. Perencanaan reaktivasi sumur *shut-in* pada Struktur “DAL” dimulai dengan melakukan *screening* sumur dan lapisan dengan parameter sumur *high water cut* ($WC > 90\%$), ketersediaan data *lumping*, kumulatif produksi yang tidak melebihi *cut-off* strukturan, serta nilai *recovery factor* yang dianalisa berdasarkan perbandingan kumulatif produksi dengan *inplace* radius sumuran dengan perhitungan *recovery factor* berdasarkan data SCAL, analisa permasalahan *high water cut* pada sumur dengan melakukan analisa *water oil ratio* dengan metode *Chan's Diagnostic Plot*, melakukan analisa menggunakan CBL (*Cement Bond Log*) untuk mengetahui kondisi ikatan (*bonding*) semen, analisa korelasi sumur, analisa *decline* (DCA) dengan metode *Trial Error* dan X^2 *Chi-square Test* dan melakukan *forecast* untuk memperkirakan produksi di masa yang akan datang, hingga melakukan analisa keekonomian. Perencanaan reaktivasi pada Sumur DAL-031 sebagai sumur *shut in* dengan produksi terakhir pada 21 Januari 2016 dilakukan untuk meningkatkan perolehan minyak pada Lapangan “LAZ”.

Pada perencanaan reaktivasi Sumur DAL-031 diperoleh *oil gain* 47.04 bopd dengan tipe *Exponential Decline* dan *forecast* selama 8 tahun. Dilakukan analisa keekonomian dengan menghitung lima indikator keekonomian (NPV, IRR, POT, PIR, DPIR) serta analisa sensitivitas, diperoleh bahwa perencanaan reaktivasi Sumur DAL-031 layak dan ekonomis untuk dikembangkan.

Kata kunci: *high water cut*, sumur *shut in*, reaktivasi sumur, lapangan minyak tua.

ABSTRACT

PRODUCTION OPTIMIZATION WITH SHUT-IN DAL-031 WELL REACTIVATION IN THE "LAZ" FIELD

By
Dea Anfi Lazaritsa
NIM: 113190163
(Petroleum Engineering Undergraduated Program)

The "LAZ" Field is one of the mature oil fields located in Prabumulih City, South Sumatra Province which began production in 1947. Over time, water production in the "LAZ" Field will increase, until the end of 2022 average field water cut value reaches 94%. The "DAL" structure is one of the old structures in the "LAZ" Field which started production in 1949 with a 0% water cut and over time tends to increase until in 2022 the water cut value reaches 97%.

In the "DAL" Structure of the "LAZ" Field, production optimization activities are carried out, namely reactivation planning where most of the wells have a high water cut value and many suspended/shut-in wells. Planning for reactivation of shut-in wells on the "DAL" structure begins with screening of wells and layers with well parameters such high water cut ($WC > 90\%$), availability of lumping data, cumulative production that does not exceed the cut-off structure, recovery factor value that is analyzed based on comparison of cumulative production with inplace radius wells and calculation of recovery factor based on SCAL data, analysis of high water cut problems in wells by analyzing water oil ratio using Chan's Diagnostic Plot method, analyzing using CBL (Cement Bond Log) to determine cement bond conditions, well correlation analysis, decline analysis (DCA) using the Trial Error and the X^2 Chi-square Test method, perform forecasts to estimate future production, and also economic analysis. Planning for reactivation of the DAL-031 well as a shut-in well with the last production on January 21, 2016 was carried out to increase oil recovery in the "LAZ" field.

The planned reactivation of the DAL-031 well, an oil gain of 47.04 bopd was obtained with the Exponential Decline type and forecast for 8 years. Economic analysis was carried out by calculating five economic indicators (NPV, IRR, POT, PIR, DPIR) as well as sensitivity analysis, it was found that the plan for reactivation of the DAL-031 Well is feasible and economical to develop.

Keywords: high water cut, shut in well, well reactivation, mature oil field.