











#### IV. CONCLUSION

Based on the evaluation results and interpretation of experimental data, this study studies the effect of the swelling process with CO<sub>2</sub> gas injection from residual vacuum feeds. The study was conducted to see the effect of swelling, reaction time, temperature, and pressure on product quality and quantity. The experimental results can be concluded that the swelling process occurs under supercritical conditions. This case occurs at a pressure of 160 psi, a temperature of 350°C, and a reaction time of 90 minutes produces an optimal swelling factor of 7.14%. The highest percentage of liquid product analysis using the Gas Chromatography-Mass Spectrophotometer (GC-MS) instrument analysis method is at 160Psi pressure, 350°C temperature, and 90 minutes reaction time, resulting in an aromatic compound content of 71.53%, saturates compound 35.79% and olefin compounds at 10.05%.

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