

DAFTAR ISI

LEMBAR PENGESAHAN	ii
PERNYATAAN KEASLIAN KARYA ILMIAH	iii
HALAMAN PERSEMBAHAN	iv
PRAKATA.....	v
RINGKASAN	vi
ABSTRACT.....	vii
DAFTAR GAMBAR	xiv
DAFTAR TABEL.....	xviii
DAFTAR SINGKATAN DAN LAMBANG	xx
DAFTAR SINGKATAN DAN LAMBANG (lajutan).....	xxi
BAB I PENDAHULUAN.....	1
I.1 Latar Belakang	1
I.2 Maksud dan Tujuan.....	2
I.3 Rumusan Masalah	2
I.4 Batasan Masalah	2
I.5 Metodologi	2
I.6 Sistematika Penulisan	6
BAB II TINJAUAN LAPANGAN	7
II.1. Letak Geografis Lapangan “JF”.....	7
II.2. Geologi Regional Lapangan “JF”	7
II.3. <i>Petroleum System</i> Lapangan “JF”.....	13
II.3.1. Batuhan Induk	13

II.3.2.	Perangkap.....	13
II.3.3.	Batuhan Tudung.....	13
II.3.4.	Batuhan Reservoir.....	14
II.3.5.	Migrasi	14
II.4.	Data Karakteristik Reservoir.....	14
II.4.1.	Data Sifat Fisik Batuan Reservoir.....	14
II.4.2.	Data Sifat Fisik Fluida Reservoir	15
II.4.3.	Data Kondisi Reservoir.....	17
II.4.4.	Data Sejarah Produksi	18
IV.1.5.	Data <i>Inplace</i> dan Inisialisasi.....	21
IV.1.6.	Data <i>History Matching</i>	22
BAB III DASAR TEORI.....		25
III.1	Dasar Teori Sumur <i>Infill</i>	25
III.1.1.	Perencanaan Titik Sumur <i>Infill</i>	26
III.1.1.1.	Radius Pengurasan Sumur <i>Existing</i>	26
III.1.1.2.	Penentuan Lokasi Sumur <i>Infill</i> Optimum	26
III.1.1.2.1.	<i>Hydrocarbone Pore Volume</i> (HCPV)	27
III.1.1.2.2.	<i>Oil per Unit Area</i> (OPU).....	27
III.1.1.2.3.	<i>Flowrate Capability</i>	28
III.1.1.2.4.	<i>Oil Producing Potential</i>	28
III.1.1.3.	Penentuan Jumlah Sumur <i>Infill</i>	29
III.2	Simulasi Reservoir	30
III.2.1	Persiapan Data	31
III.2.1.1.	Data Geologi, Geofisika dan Petrofisika.....	32
III.2.1.2.	Data Sifat Fisik Batuan Reservoir.....	32
III.2.1.3.	Data Sifat Fisik Fluida Reservoir.....	33

III.2.1.4. Data Tekanan	33
III.2.1.5. Data Penunjang	33
III.2.2. Pengolahan Data	33
III.2.2.1. <i>Rock Region</i>	34
III.2.2.2. Peremeabilitas Relatif	34
III.2.2.3. Tekanan Kapiler.....	34
III.2.2.4. Pengolahan Data PVT	35
III.2.3. Input Data.....	35
III.2.4. Validasi Model.....	36
III.2.4.1. Inisialisasi	36
III.2.4.2. History Matching	36
III.2.4.3. PI Matching.....	37
III.2.4.4. Prediksi	37
III.2.4.4.1. Penentuan <i>Constrain Liquid Rate</i>	38
III.2.4.4.2. Penentuan Laju Alir <i>Economic Limit</i>	38
III.2.4.4.3. Penentuan <i>Water Cut</i> Maksimum	39
III.2.4.4.4. Penentuan BHP Minimum	39
III.2.5. Cara Menganalisa Hasil Skenario.....	39
III.2.5.1. Konsep Cadangan Reservoir.....	39
III.2.5.1.1. <i>Original Oil in Place</i> (OOIP).....	39
III.2.5.1.2. <i>Recovery Factor</i> (RF).....	40
III.2.5.1.3. <i>Estimated Ultimate Recovery</i> (EUR)	41
III.2.5.1.4. Cadangan Sisa Minyak.....	41
III.2.5.1.5. Increment Oil.....	41
III.3. Analisa Keekonomian	42
III.3.1. <i>Production Sharing Contract</i> (PSC) <i>Gross Split</i>	42

III.3.1.1. <i>Base Split</i>	43
III.3.1.2. <i>Variable Split</i>	43
III.3.1.3. <i>Progressive Split</i>	47
III.3.2. Analisa <i>Cash Flow</i>	49
III.3.2.1. Pengertian <i>Cash Flow</i> dan <i>Net Cash Flow</i>	49
III.3.2.2. <i>Cash Flow</i> untuk Proyek Migas.....	49
III.3.2.2.1. <i>Gross Revenue</i>	50
III.3.2.2.2. <i>Cost</i>	51
III.3.2.2.3. Eskalasi.....	52
III.3.2.2.4. <i>Contractor Split</i> dan <i>Government Split</i>	52
III.3.2.2.5. <i>Net Cash flow & Profit Oil</i>	53
III.3.2.2.6. <i>Net Cash flow & Tax</i>	53
III.3.2.3. Penyusutan (Depreciation).....	53
III.3.2.3.1. <i>Straight Line Method</i>	54
III.3.2.3.2. <i>Declining Balance Method</i>	54
III.3.2.3.3. <i>Double Declining Balance Method</i>	54
III.3.2.3.4. <i>Units of Production Depreciation</i>	55
III.3.2.3.5. <i>Sum-Of-Years Digits Depreciation</i>	55
III.3.3. Indikator Ekonomi	55
III.3.3.1. <i>Net Present Value</i> (NPV).....	56
III.3.3.2. <i>Internal Rate of Return</i> (IRR)	57
III.3.3.3. <i>Pay Out Time</i> (POT)	57
III.3.3.4. <i>Profit to Investment Ratio</i> (PIR)	58
III.3.3.5. <i>Discounted Profit to Investment Ratio</i> (DPIR)	58
III.3.4. Analisa Sensitivitas.....	58

BAB IV STUDI SIMULASI RESERVOIR DI LAPANGAN MINYAK “JF”	
DAN ANALISA KEEKONOMIAN	59
IV.2. <i>Forecasting</i>	59
IV.2.1. Pennetuan <i>Constraint</i>	60
IV.2.1.1. <i>Maksimum Liquid Rate</i>	60
IV.2.1.2. <i>Economic Limit Rate</i>	60
IV.2.1.3. <i>Maksimum Water Cut</i>	61
IV.2.1.4. <i>Minimum BHP</i>	61
IV.2.2. Penentuan Lokasi Sumur <i>Infill</i>	61
IV.2.2.2. Distribusi Hydrocarbon Pore Volume	62
IV.2.2.3. Distribusi <i>Oil per Unit Area</i> (OPU).....	63
IV.2.2.4. Distribusi <i>Flowrate Capability</i>	64
IV.2.2.5. Distribusi Oil Producing Potential.....	65
IV.2.3. Prediksi dan Pengembangan Skenario Infill	66
IV.3. <i>Basecase</i>	66
IV. 3. <i>Infill</i>	70
IV.3.1. Skenario 1 (<i>Basecase</i> + Sumur <i>Infill</i> dengan jarak 300m).....	70
IV.3.1.1. Skenario 1-A (<i>Basecase</i> + 11 Sumur <i>Infill</i> dengan jarak 300m).....	74
IV.3.1.2. Skenario 1-B (<i>Basecase</i> + 13 Sumur <i>Infill</i> dengan jarak 300m).....	76
IV.3.1.3. Skenario 1-C (<i>Basecase</i> + 17 Sumur <i>Infill</i> dengan jarak 300m).....	78
IV.3.1.4. Analisa Skenario 1	80
IV.3.2. Skenario 2 (<i>Basecase</i> + Sumur <i>Infill</i> dengan jarak 225m).....	81
IV.3.2.1. Skenario 2-A (<i>Basecase</i> + 11 Sumur <i>Infill</i> dengan jarak 225m).....	84

IV.3.2.2. Skenario 2-B (<i>Basecase + 13 Sumur Infill</i> dengan jarak 225m).....	87
IV.3.2.3. Skenario 2-C (<i>Basecase + 17 Sumur Infill</i> dengan jarak 225m).....	89
IV.3.2.4. Analisa Skenario 2	91
IV.3.3. Skenario 3 (<i>Basecase + Sumur Infill</i> dengan jarak 150m).....	92
IV.3.3.1. Skenario 3-A (<i>Basecase + 11 Sumur Infill</i> dengan jarak 150m).....	95
IV.3.3.2. Skenario 3-B (<i>Basecase + 13 Sumur Infill</i> dengan jarak 150m).....	98
IV.3.3.3. Skenario 3-C (<i>Basecase + 17 Sumur Infill</i> dengan jarak 225m).....	100
IV.3.3.4. Analisa Skenario 3	102
IV.4. Kesimpulan Skenario <i>Infill</i> Keseluruhan	103
IV.4. Analisa Keekonomian	104
IV.4.1. Biaya.....	106
IV.4.2. Syarat dan Ketentuan <i>Gross Split</i>	106
IV.4.3. Analisa Ekonomi	109
IV.4.4. Analisa Sensitivitas Keekonomian	112
BAB V PEMBAHASAN	115
BAB VI KESIMPULAN	125
V.1 Kesimpulan	125
DAFTAR RUJUKAN	126
LAMPIRAN	128