

DAFTAR ISI

HALAMAN JUDUL

HALAMAN PENGESAHAN.....	ii
PERNYATAAN KEASLIAN KARYA ILMIAH.....	iii
KATA PENGANTAR.....	iv
ABSTRAK	v
ABSTRACT	vi
DAFTAR ISI.....	vii
DAFTAR GAMBAR.....	xii
DAFTAR TABEL	xvi
DAFTAR LAMPIRAN	xvi
DAFTAR SINGKATAN DAN LAMBANG	xviii

BAB I PENDAHULUAN.....

1.1. Latar Belakang	1
1.2. Rumusan Masalah.....	2
1.3. Tujuan Penelitian	3
1.4. Batasan Masalah	3
1.5. Lokasi Penelitian.....	4

BAB II TINJAUAN PUSTAKA.....

2.1. Geologi Regional Cekungan Sumatera Tengah.....	5
2.1.1. Fisiografi Cekungan Sumatera Tengah	5
2.1.2. Tektonik Cekungan Sumatera Tengah	6
2.1.3. Tektonostratigrafi Cekungan Sumatera Tengah.....	8
2.1.3.1. Fase Pembentukan Batuan Dasar (Tektonik Fase F0)	9
2.1.3.2. Fase Intra-cratonic Rifting dan Rift Infill (Tektonik Fase F1)	10
2.1.3.3. Fase Interior Sag Basin (Tektonik Fase F2).....	10
2.1.3.4. Fase Kompresi (Tektonik Fase F3)	11
2.1.4. Stratigrafi Cekungan Sumatera Tengah	11
2.1.4.1. Batuan Dasar (Basement).....	11

2.1.4.2. Kelompok Pematang	13
2.1.4.3. Kelompok Sihapas	13
2.1.4.4. Kelompok Petani	15
2.1.4.5. Kelompok Minas	15
2.2. Petroleum System Cekungan Sumatera Tengah	16
2.2.1. Batuan Induk	16
2.2.2. <i>Reservoir</i>	17
2.2.3. Batuan Tudung	17
2.2.4. Perangkap	17
2.3. Penelitian Terdahulu	17
2.3.1. <i>Prediction of Reservoir Properties by Integration of Seismic Stochastic Inversion and Coherency Attributes in Super Giant Ghawar Field</i>	17
2.3.2. Aplikasi Inversi Stokastik Untuk Karakterisasi Reservoir Batupasir Formasi Gumai Pada Lapangan “Mr”	20
BAB III DASAR TEORI	24
3.1. Metode Inversi Seismik	24
3.1.1. Klasifikasi Inversi Seismik.....	25
3.1.2. Inversi Stokastik	27
3.4.3. Inversi Deterministik ModelBased.....	31
3.2. Variogram	34
3.2.1. Variogram Eksperimental.....	34
3.2.2. Variogram Teoritis	36
3.2.2.1. Model Eksponensial	36
3.2.2.2. Model Sperical	36
3.2.2.3. Model Gauss	37
3.3. Interpolation.....	37
3.3.1. <i>Kriging</i>	37
3.3.2. <i>Co-Kriging</i>	38
3.4. Metode Distribusi : <i>Squential Gaussian Simulation</i>	38
3.5. Atribut Seismik	38
3.5.1. Atribut Amplitudo	40

3.5.1.1. Atribut <i>Root Mean Square</i> (RMS)	41
3.5.2. Atribut Kompleks	41
3.5.2.1. Atribut <i>Envelope</i>	42
3.5.2.2. Atribut <i>Sweetness</i>	43
3.6. <i>Time To Depth Conversion</i>	44
3.7. <i>Direct Hydrocarbon Indicator</i>	45
BAB IV METODE PENELITIAN	47
4.1. Pengumpulan Data.....	47
4.1.1. <i>3D Seismic Post Stack Time Migration</i>	47
4.1.2. Data Sumur.....	49
4.1.3. Data <i>Checkshot</i>	49
4.1.4. Data <i>Marker</i>	50
4.2. Tahapan Pengolahan Data	51
4.2.1. <i>Target Zone Analysis</i>	52
4.2.2. <i>Tuning Thickness Analysis</i>	52
4.2.3. <i>Sensitivity Analysis</i>	54
4.2.4. <i>Wavelet Extraction</i>	54
4.2.5. <i>Convolution and Well Seismic Tie</i>	56
4.2.6. <i>Quality Control Well Seismic Tie</i>	57
4.2.7. <i>Picking</i>	58
4.2.7.1. <i>Picking Horizon</i>	58
4.2.7.2. <i>Picking Fault</i>	59
4.2.8. <i>Stochastic Inversion</i>	59
4.2.8.1. <i>Structural Model Building (Fault Modeling, Pillar Griding, Layering)</i>	60
4.2.8.2. <i>Well Log Upscaling</i>	61
4.2.8.3. <i>Variogram Experimental Analysis</i>	62
4.2.8.4. <i>Variogram Teoritis dan Fitting Variogram</i>	65
4.2.7.5. <i>Prior Model</i>	65
4.2.7.6. <i>Running Inversi Stochastic</i>	66
4.2.9. <i>Deterministic ModelBased Inversion</i>	68
4.2.9.1. <i>Initial Model Building(AI & Density)</i>	68

4.2.9.2. <i>Pre-Inversion Analysis(AI & Density)</i>	69
4.2.9.3. <i>Apply to Volume Deterministic Model Based (AI & Density)</i>	70
4.2.10. <i>Extraction Attribute</i>	71
4.2.10.1. <i>RMS Attribute</i>	72
4.2.10.2. <i>Envelope Attribute</i>	72
4.2.10.3. <i>Sweetness Attribute</i>	72
4.2.11. <i>Time Depth Conversion</i>	72
BAB V HASIL DAN PEMBAHASAN	74
5.1. <i>Target Zone Analysis</i>	74
5.2. <i>Tuning Thickness</i>	76
5.3. <i>Sensitivity Analysis</i>	76
5.4. <i>Well Seismic Tie</i>	78
5.5. <i>Quality Control Well Seismic Tie</i>	79
5.6. <i>Picking Horizon</i>	80
5.7. <i>Picking Fault</i>	82
5.8. <i>Time Structure Map</i>	83
5.9. <i>Depth Structure Map</i>	84
5.10. <i>Stochastic Inversion Acoustic Impedance (AI)</i>	87
5.10.1. <i>Structural Model</i>	87
5.10.2. <i>Well Log Upscaling</i>	88
5.10.3. <i>Variogram Analysis</i>	90
5.10.4. <i>Prior Model</i>	92
5.10.5. <i>Hasil Stochastic Inversion Acoustic Impedance (AI)</i>	92
5.11. <i>Deterministic Model Based Inversion Acoustic Impedance (AI)</i>	96
5.11.1. <i>Initial Model AI Analysis</i>	96
5.11.2. <i>Pre-Inversion AI Analysis</i>	97
5.11.3. <i>Analysis Deterministic Model Based Inversion Acoustic Impedance</i>	99
5.12. <i>Deterministic Model Based Inversion Density</i>	102
5.12.1. <i>Initial Model Density Analysis</i>	102

5.12.2. <i>Pre-Inversion Density Analysis</i>	103
5.12.3. Hasil <i>Deterministic ModelBased Inversion Density</i>	104
5.13. <i>Bright Spot Analysis with Extraction Attributes</i>	106
5.13.1. <i>Bright Spot Zona Top Telisa</i>	107
5.13.2. <i>Bright Spot Zona T_TE1450</i>	108
5.13.3. <i>Bright Spot Zona T_D1600</i>	110
5.13.4. <i>Bright Spot Zona T_D1800</i>	111
5.14. <i>Characterization and Prospect Zone Analysis</i>	113
5.14.1. Zona Top Telisa.....	113
5.14.2. Zona T_TE1450	114
5.14.3. Zona T_D1600	116
5.14.4. Zona T_1800	118
5.15. <i>New Well Recommendation Analysis</i>	120
BAB VI KESIMPULAN DAN SARAN.....	122
6.1. Kesimpulan	122
6.2. Saran	123

DAFTAR PUSTAKA

LAMPIRAN