e-ISSN 2580 - 0752

BULLETIN OF
GEOLOGY
Fakultas Ilmu dan Teknologi Kebumian (FITB)
Institut Teknologi Bandung (ITB)

STRUCTURAL AND GEOMECHANICAL ANALYSIS TO PREDICT NATURALLY FRACTURED CARBONATE RESERVOIR CHARACTERIZATION IN THE WHF FIELD, BANGGAI BASIN, INDONESIA

REZA ARMANDA[1], INDRA GUNAWAN[1]

1. Program Studi Teknik Geologi, Fakultas Ilmu dan Teknologi Kebumian, Institut Teknologi Bandung (ITB), Jl. Ganesha No.10, Bandung, Jawa Barat, Indonesia.

Abstract – The WFH field has been in production since 2005 with reserves of 120 MMBO and has reached peak production of up to 4000 BOPD. The reservoir rock from this field is Miocene Bioclastic Limestone with an average matrix porosity of 8% and a water saturation of 13%. Based on the results of the core rock study and analysis of well production tests, the reservoir in the WFH field indicates the presence of natural fractures that control porosity and permeability so that a mechanical approach such as structural and geomechanical analysis is needed to get an understanding of characteristics and distribution of natural fractures that the resolution is under seismic resolution.

Geological structure parameters are obtained from the sesimic interpretation of reservoir horizon and several faults then reconstructed to obtain the strain value from this field. Geomechanical properties such as the stress regime in the WFH field are obtained from the results of stress analysis. The stress analysis shows that the WFH field is in a normal fault regime (Sv> SHmax> Shmin). Structural reconstrution analysis showed a vertical strain value is 18% and horizontal strain value is -17%. This value is obtained from the sum of the movement of reservoir in the thrust fault plane. The slope modeling of the simulated fracture ranges from 35 to 40 degrees which is identical to the natural fracture observations obtained from the log image interpretation. The intensity of fractures in the WFH field reservoir is in the area around the fault plane, especially in the bend area. In addition, the intensity of fractures that could potentially open is indicated by a large Slip Tendency value of 0.4. The incorporation of areas with high slip tendency and fracture instensity resulted in an open natural fracture zone in this reservoir trending NW-SE which is associated with factoring faults that are identical to the trend of the WFH field structure. Modeling from this subsurface data is expected to be able to build a reliable geological and geomechanical structure model to provide the best recommendations for the placement of further wells and as an analogy in reducing the risk of exploration in a similar play.

1. INTRODUCTION

WFH oil field is located within the Senoro-Toili Block in the eastern arm of Sulawesi Island, Indonesia and is operated by JOB Pertamina-Medco E&P Tomori Sulawesi **(Figure 1)**. This area is considered as a new frontier petroleum province in eastern Indonesia when the first exploration activity started by Union Texas Petroleum (UTP) in 1980. WFH structure is an anticline thrust play covered by seismic and several exploration wells. The structure size is approximately 1,937 acres, which is aligned NNE-SSW and bounded to the east by WFH thrust fault. Plan of Development of WFH structure is taken under the new operator JOB Pertamina-Medco Tomori Sulawesi (JOB PMTS) 106.6 MMBO of total resources. The field was produced since 2005 from 5 wells which reached peak production up to 4000 BOPD in 2007. WFH's structure petroleum system consists of: source rock from shale in Tomori Formation with Total Organic Contain up to 4% and matured on sub-thrust zone in Batui Thrust. Then, the hydrocarbons migrate to the bioclastic limestone reservoir of the Tomori Formation which is fractured during the thrusting process. Shale of Matindok Formation is a seal rock for WFH structure with an average thickness 250 feet. Trap of the WFH structure is a 3-way imbricated thrust sheet structure with the NE-SW orientation formed as the impact of collision between banggai-sula microcontinental with East Arm Ophiolite Belt.

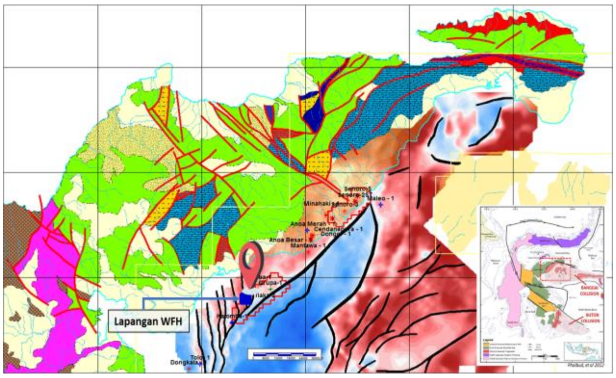

Figure 1. WFH location with Depth Structure Map.

The reservoirs in the WFH oil field are fractured Platform carbonates of Tomori Formation. The rock is a very tight limestone, with matrix porosity is generally very low due to complex diagenesis and occlusion of the intergranular porosity by cementation, dolomitization and re-crystallization. The reservoir is extensively fractured and enhancing permeability and effective porosity **(Figure 2)**.

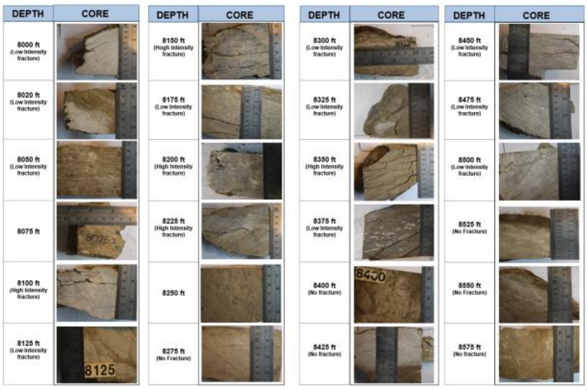

Figure 2. Fracture evidence from Core in Tomori Formation.

2. DATA AND METHODOLOGY

• Data

One volume 3D seismic data available to re-interpret. The seismic is in PSDM and in good quality image. WFH Field has 13 wells with some logs and SCAL data, which nine of them are a deviated well. Well testing data in WFH Field available for wells WFH-06, WFH-09 and WFH-10. PVT laboratory data was analyzed to characterize reservoir fluid properties as a function of pressures. PVT data available for wells WFH-02 and WFH-05. All data inventory can be seen on **(Table 1)**.

INVENTORI DATA PENELITIAN

GEOLOGY	JUMLAH	GEOFISIKA	RESERVOIR	JUMLAH
Core	4 report	3D Seismik PSDM 110 km^2	Fluid Properties	1 report
Wireline and Image Log	13 set wireline log 2 set image log		Rock Properties	1 report
Geomechanics	2 report		*Well Integrity*	1 report
Field Data	13 report		Well test	10 report

SEISMIC	CORE	IMAGE LOG	WIRELINE LOG	
3D Seismik OBN 2019	WFH-1, WFH-2, WFH-3, WFH-4	WFH-7, WFH-11	Sumur Eksplorasi (4) WFH-1, WFH-2, WFH-3, WFH-4	Sumur Pengembangan (4) WFH-5, WFH-6, WFH-7ST2A, WFH-8, WFH-9, WFH-10, WFH-11, WFH-12ST, WFH-13ST

• Method

Characterizing naturally fractured reservoirs from Tomori formation was performed with integrating all the source and summarized by methodology as the following **(Figure 3)**:

- Vertical fractured analysis: Description and analysis of core data, thin section and petrophysical analysis to identified fracture characterizations that related to:
  - ➢ Type of naturally fractured
  - ➢ Fracture and matrix permeability
  - ➢ Fracture and matrix porosities
  - ➢ Matrix and fracture compressibility
  - ➢ "Storage capacity" from matrix and fracture
- Lateral fracture analysis: Using elastic dislocation method to map the distribution and prediction of fractures orientation, fracture density, and fracture mode (shear or tensile). In another hand, critical stressed fracture analysis give contribution to determine the type of the fractures, whether they are natural open fractures or closed fractures. Geometrical mapping of Naturally fractured WFH oil field (Southern and Northern parts) based on comprehensive interpretation of available 2-D seismic data, conventional core, well log and seismic rock physic data to determine:
  - ➢ Lateral distribution of fracture networks

- ➢ Lateral orientation and direction of fractures
- ➢ Lateral density of fractures

– Dynamics fracture analysis : Description and analysis of well test data to identified fracture characterizations that related to:

- ➢ Pressure Transient Analysis (DST and other well testing methods)
- ➢ PVT analysis
- ➢ Reservoir and production performances

– Integrated Fractured Reservoir Modelling : Modelling static and dynamic fractured reservoir properties that related to:

- ➢ Deposition facies modelling
- ➢ Rock type modelling
- ➢ Matrix properties modelling
- ➢ Fracture properties modelling
- ➢ Reserve calculation and history matching
- ➢ Development scenario and Economical Analysis

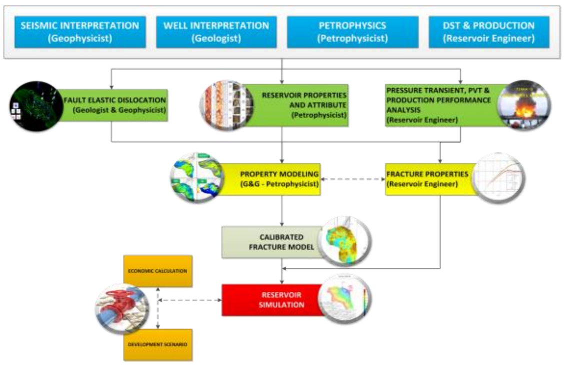

Figure 3. Methodology workflow.

3. RESULT

– Vertical Fracture Analysis

WFH Field is located within series of thrust fault system characterized by NE-SW trending, NW dipping low-angle thrust fault (steepen to the west). In general, they forms series of back-stepping thrust to the west developing imbricates thrust system known as duplex geometry. These thrust system involving all stratigraphic sequence in the area indicating that they formed very young approximately for the last 5 Ma. The maximum direction of shortening is interpreted to be NE-SW based on general orientation of folding and thrust fault. The reservoir target, Tomori Formation is highly thrusted-folded and may be fractured due to high intensity deformation along the thrust plane. Most of the wells were drilled in the top of anticline bounded by thrust fault and their all deliver excellent hydrocarbon production.

Analysis on petrophysical properties, cut off determination was applied to consider the calculation. Porosity and V-shale cut off was determined from the result of calculation using wireline log and core data. This was done in the Tomori Fm. interval where DST and production test was taken. Flow and no flow test zone in each well is used to bound V-shale and porosity data that used for cut off determination. According to porosity and V-shale cross-plot, WFH field cut off determination for V-shale (Vsh) 34%, Porosity (PHIE) 5%. Water saturation (Sw) was determined from well WFH-4 collected from depth of 8080.8 ft. Cut off values for Sw was determined from the data plotting between Sw and Fw from. According to data plotting, water saturation (SW) cut off of WFH field was determined 51% **(Figure 4).**

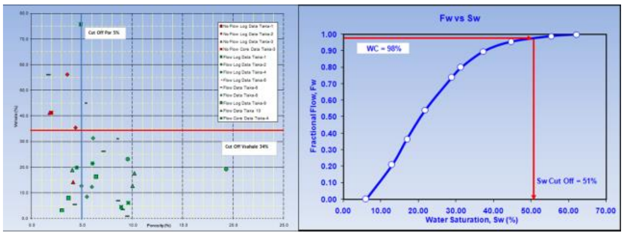

Figure 4. Reservoir Cut-Off.

To recognize the fracture evidence, conventional petrophysical evaluation method to indicate the fracture evidence was applied. This method is crossover between PHIA and PHIS. In WFH-4, the fracture evidence is shown in red zone from PHIA and PHIS crossover. Second method to indicate the fracture evidence in WFH field is from dual Porosity exponent chart. The m exponent value

DOI: 10.5614/bull.geol.2021.5.2.2

range 1.05-1.57. In this chart, all the data plotting between total porosity and fracture porosity give m exponent value concentrate on fracture zone. Its mean that the porosity in WFH field is controlled by fracture **(Figure 5)**.

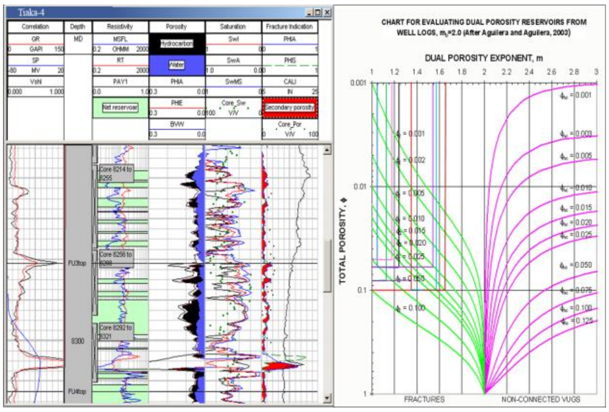

Figure 5. Fracture determination from petrophysical analysis.

– Lateral Fracture Analysis

The elastic dislocation (ED) methodology was used to predict distribution of fractures in WFH Field by estimating strain and stress in the rock volume which has been derived from seismic interpretation. In ED theory, faults are represented as displacement discontinuities and the surrounding volume is modeled as a uniform elastic half space (Dee et al., 2007). ED forward modelling used magnitudes and orientations of the principal stresses that acting at each point in the rock volume to predict failure mode: shear or tensile, and also its orientation. Furthermore, the orientations of principal stresses also control the result of normal, reverse, or strike-slip fracturing. Maximum Coulomb Shear Stress (MCSS) has been used to define the deformation intensity as an indicator for relative of fracture density in WFH field, which is controlled by the degree to which shear stress exceed Mohr-Coulomb failure envelope (Freeman et al. 2015, Maerten et al., 2002, Bourne et al., 2001). Reliable ED forward modelling is also controlled by background strain and elastic properties of rock i.e Poisson's ratio and Young's modulus. Poisson's ratio governs the result in perturbed stress from the mechanical interaction between interacted faults. On the other hand, Young's modulus is related to the magnitude of elastic stress from remote strain (Bourne et al, 2001).

ED methodology that have been applied to predict distribution of fractures network in WFH field, used faults interpretation as mechanical boundaries and Tomori Formation as observation surface. The fault surfaces have been split into number of panels which represent dip angle and displacement. Another boundary that used to control ED modelling is rock mechanical parameters. Rock mechanical properties of Tomori Formation has been derived geomechanical analysis of WFH 7ST2A, at this case the only known information is Poisson ratio 0.24. The rest of unknown parameters, i.e Young's modulus, total density, cohesive strength, and internal friction are used Solenhofen Limestone as an analog. Hence, we used 63 MPA for cohesive strength and 0.6 for coefficient internal friction.

(Figure 6) shows that interpreted structural model within Tomori Formation have undergone compressional strain 0.014 or equal to 1.4 %. This value is derived by the summation of heaves from interpreted faults and Tomori horizon. The heaves itself have derived by aggregating the offsets (heaves) of all interpreted faults at Tomori horizon perpendicularly to average strike (Freeman et al., 2015).

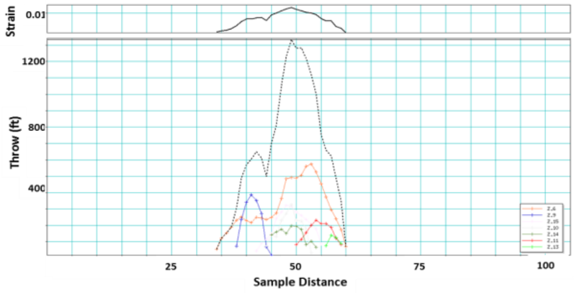

Figure 6. Profile of interpreted faults, with summation of heave. The upper figure is the summation of heave which scaled to compressional strain (0.014 or equals to 1.4 % compression).

ED forward modelling produced mostly distributed fractures are in reverse mode **(Figure 7)** which mirrored principal regional stresses in WFH Field. However, the result of ED forward modelling also shows minor normal and strike slip fractures in Tomori Formation. The orientation of simulated fractures network is shown on (**Table 2**). Dominant strike of simulated fractures is NW - SE with average dip for all predicted fractures has been confirmed by interpreted natural open fractures in image log. The differences occurred in average dip angle between simulated and observed fractures from image log. However, the average dip angle of ED fractures seems more reliable as they are closed to the average of dip angle from interpreted faults (40°).

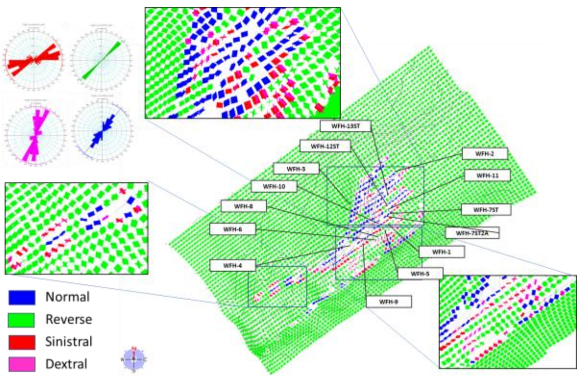

Figure 7. Distribution of predicted fractures which has been generated using ED forward modelling.

Table 2. The comparison of simulated and observed fractures.

	Fracture Mode	Simulated	
		Dominant Strike	Average Dip Angle
Simulated	Reverse	NE - SW	34°
	Normal	NE - SW	58°
	Strike slip (Dextral)	E - W	65°
	Strike slip (Sinistral)	NW - SE	57°
	All Fractures	NW – SE	36°
Observed (from Image Log)		NW – SE	54°

Qualitative analysis of fracture density has been analyzed by generating maximum coulomb shear stress as the indicator for strain and stress magnitude. On a fracture density map **(Figure 8)**, red color represents large values of MCSS which correspond to the high values of volumetric strain and more intensely fractures. The high predicted fracture densities occur along the fault surface, especially at bends, which are the concentration of stress pertubation on the deformation surface. Furthermore, the highest densities also present at faults which have high dip-slip values. On the other hand, purple color indicates small values of volumetric strain and low fractures density. The strains shadow is found further away from the interpreted faults surface where the deformation surface is less perturbed by faulting. Hence, it can be concluded that the low density is related to the stress relief from faulting as mentioned before by Maerten et al, 2002.

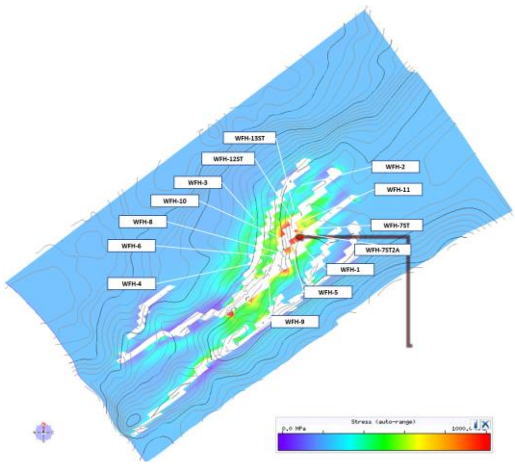

Figure 8. Fracture density map which indicated by Maximum Coulomb shear stress.

DOI: 10.5614/bull.geol.2021.5.2.2

– Static and Dynamic Fracture Analysis

In WFH Field, total 13 well was drilled consist of 4 exploration well and 9 development well. All well was done conducting well test, but just several well can complete with the complete and good data. In this paper will be discussed one well (WFH-5), and other well will be resumed in **(Table 2)**.

WFH-5 is the 1st development well in this Field, it was spudded in Oct 16th 2004 and completed on Dec 2nd 2004. After well completion, the well testing has been conducted with perform production test first, resume of surface production test in **(Table 3)**.

Table 3. Surface Production Test Resume.

		FAF TEST		
Choke Size	**…. / 64 Inc**	**16**	**20**	**24**
Date		29-Nov-04	29-Nov-04	29 Nov - 1 Dec 2004
Hours On Test	Hrs	8.25	7.55	41.93
Well Head Pressure	Psig	1187.47	1108.17	984.28
Well Head Temperature	oF	80.86	80.69	89.42
Separator Pressure	Psig	120.00	149.69	149.78
Oil Rate	**Bopd**	**659.46**	**1024.05**	**1328.26**
Gas Rate	**MMscfd**	**110.53**	**238.57**	**453.58**
G.O.R	scfd/bbl	168.33	233.04	341.63
Water Rate	Bwpd	0	0	0
BS & W	%	0.00	0.00	0.00
Oil Gravity @ 60 ^{0}F	SG	0.89	0.89	0.89
Specific Gravity Gas	Air = 1	0.75	0.76	0.74
H2S (ppm)	ppm	-	250-300	250
BHP		3388	3256	3009

The production testing was executed with Flow After Flow (FAF) test mode with three of choke changing. The highest oil rate reach on extended choke 24/64" for 1328 BOPD. After production test, PBU test have conducted with shut in time for 52 hr **(Figure 9)**.

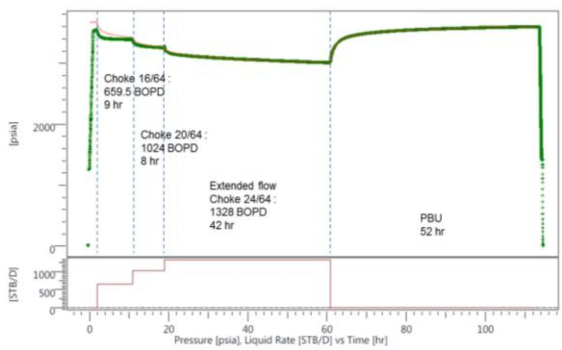

Figure 9. History Test.

The Pressure Transient Analysis will be analyzed from 52 hr of PBU, after generated in log-log of pressure drop against time for quick look and analytical analysis in ETR the flow regime to the well showing typical of fractured well model and have ½ of slope, it means in the near of well bore have linear flow regime (Infinite Conductivity Fracture). In MTR the dual porosity behavior shape also presents. Below is the result after matching the model with log-log data. The Natural Fracture Reservoir parameter indicator are present, Such as : half slope, fracture half length (xf) and present of ω – λ **(Figure 10)**. Shapes of log-log plot in other wells are relatively same with the WFH-5 result, all indicating half slope and have dual porosity behavior, below are the well test result summary for all well **(Table 4)**.

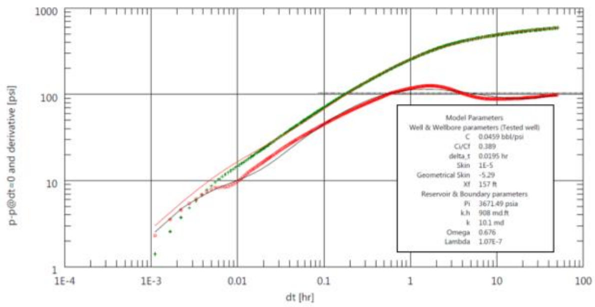

Figure 10. Log-log plot WFH-5 Well.

Table 4. Well Test Resume.

Well	Interval Perf, ft-MD KB	Pr, Psi	k, mD	NFR Indication				Extended Flow		Date
				ETR Response	Xf, ft	ω	λ			
Tiaka-2	7284-7338; 7411;7459	3553	3.4	1/2 Slope	186			1080	@24/64"	Nov-85
Tiaka-5	7970-8030; 8110-8140	3671	10.1	1/2 Slope	157	0.68	1.07E-07	1328	@24/64"	Nov-04
Tiaka-6	7660-7680;7730-7800; 7880-7910;7950-8040; 8080-8140;8170-8220	2508	0.00297	1/2 Slope	158	0.74	9.90E-04	744	@22/64"	Mar-07
Tiaka-8	7720-7818;7872-7938; 7952-7978;8076-8088	3255	7.64	1/2 Slope	221	0.43	5.96E-09	648	@12/64"	Nov-06
Tiaka-9	8687-9422;9152-9233; 9320-9422	3264	0.98	1/2 Slope	178	0.99	0.0046	809	@20/64"	Feb-07
Tiaka-10	8053-8893	3165	1.45	1/2 Slope	91.7	0.91	1.11E-04	564	@16/64"	Feb-07

– Integrated Fractured Reservoir Modelling

Static model in **(Figure 11)** was conducting mainly for generating flow units. As a result, there are 5 Flow Units in this field. For modeling needs, flow units consist of 20 layers in each flow unit allowing the distribution of property in each flow unit will be more sensitive and detail. Deposition facies modelling distribute in 3 dimensional using

DOI: 10.5614/bull.geol.2021.5.2.2

stochastic methods, *Sequential Indicator Simulation (SIS)*. This method is most appropriate for use where either the shapes of particular facies bodies is uncertain and the result is depend on up-scaled log data, variogram and frequency distribution of up-scaled data log.

Effective porosity is generated from petrophysic calculation for vertical distribution and fracture distribution map from rock physics for lateral distribution (porosity property distributed by statistic method and being controlled by fracture intensit distribution). In this case, statistic method that used to distribute is Sequential Gaussian Simulation (SGS). Poro-Perm crossplot is utilized to distribute permeability model value in each fracture. As The permeability Model was generated by honor well log perm data (cloud transform) characterization. The water saturation Model was generated by honor well log water saturation data. SW model employs SGS method to populate porosity value using SW Vs Depth relationship in each fracture character. Incorporating SW well log data with fracture character will resulting consistent result in all reservoir property data (Porosity, Permeability, NTG and V-Shale).

Dynamic Model have been made in simulating the WFH Field by implementing dual porosity models. Those include reservoir characterization, recovery optimization and reservoir management of the field. Application of the conceptual model of dual porosity with complete phase segregation was considered in this reservoir model **(Figure 12)**.

The main targets of this simulation study are to model the naturally fractured WFH field. Representative data are loaded into the simulator using the pre-processor (Builder), in preparing a simulation compatible dataset incorporating characteristics data to be used as a means of populating the reservoir simulation model with filed-representative data. Representative data are loaded into the simulator using the pre-processor (Builder), in preparing a simulation compatible dataset incorporating characteristics data to be used as a means of populating the reservoir simulation model with filed-representative data.

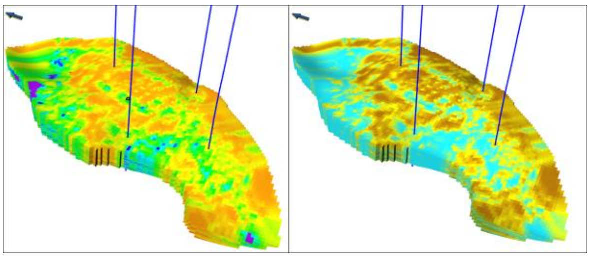

Figure 11. Fracture Intensity and Fracture Porosity Modelling.

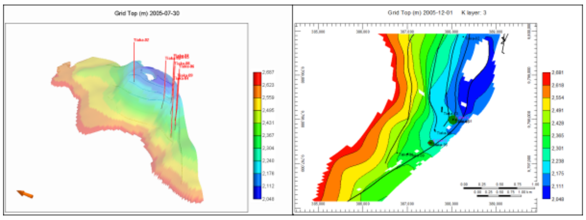

Figure 12. Dynamic Model Grid Building.

The observation was made during the production history data matching process. The observation was the constraint rate. There were gas rate, water rate and reservoir pressure that has to be match by the model. Once the reservoir simulation is calibrated to production history by the matching process, the reservoir characteristics have been as clearly defined as possible. The main objective of the projection of production performance of the WFH field is to run WFH Reactivation plan and estimate the recoverable reserves during a given period of time under difference development scenario to reach IRR more than 15% and positive NPV.

4. CONCLUSION

- Structure of WFH Field is an asymmetrical fold controlled by NE-SW trending duplex thrust-fold-belt (imbricated thrust system) involving mainly Miocene sequences.
- Porosity at Tomori Formation was assumed as combination between fracture porosity

DOI: 10.5614/bull.geol.2021.5.2.2

and matrix porosity, so all the Log reading will reflects the two type of porosity. Fracture indication and identification was conducted using conventional both petrophysical evaluation method and from dual Porosity exponent chart. The conventional method is crossover between PHIA and PHIS. Fractures were identified in most wells within the Tomori Formation in the WFH Field. This evidence is supported by thin sections evaluation of Tomori Formation from core samples.

- Rock mechanical properties of Tomori Formation has been derived geomechanical analysis of WFH 7ST2A, at this case the only known information is Poisson ratio 0.24, 63 MPA for cohesive strength and 0.6 for coefficient internal friction.
- The orientation of simulated fractures network indicated that the dominant strike of simulated fractures is NW - SE with average dip for all predicted fractures has been confirmed by interpreted natural open fractures in image log.
- The high predicted fracture densities occur along the fault surface, especially at bends, which are the concentration of perturbed stress on the deformation surface, the highest densities also present at faults which have high dip-slip values.
- The presence of fractures in the reservoir is well described in result of core goniometry study, interpretation of well test data, mud loss during drilling. In addition, observation on the cores (matrix rock) behavior and results of pressure transient analysis indicates that there is also contribution of matrix blocks into the overall recovery of the reservoir.
- Static model was generating using integrated GGR data and reach optimum result that can be matched with well test data.
- Using proper reservoir modelling and several development scenario, WFH Field possible to be reactivated in 2018 with IRR 39% and NPV 14 MMUSD.

ACKNOWLEDGEMENT

The authors wish to thank the managements of JOB Pertamina – Medco E & P Tomori Sulawesi, for the support and their permission to publish this paper.

REFERENCES

Bourne, S. J. & Willemse, E. J. 2001. Elastic stress control on the pattern of tensile fracturing around a small fault network at Nash Point, UK. Journal of Structural Geology, 23, 1753–1770.

Davies, I.C., 1990. Geological and Exploration Review of the Tomori PSC Eastern Indonesia. Proceeding of the Indonesian Petroleum Association 19th Annual convention, p. 41-50.

Dee, S., Yielding, G., Freeman, B., Healy, D., Kusznir, N., Grant, N. & Ellis, P. 2007. Elastic dislocation modelling for prediction of small-scale fault and fracture network characteristics. In: Lonergan, L., Jolly, R. J. H., Rawnsley, K. & Sanderson, D. J. (eds) Fractured Reservoirs. Geological Society, London, Special Publications, 270, 139–155, http://dx.doi.org/10.1144/GSL.SP.2007.270.01.10.

Freeman., B, Quinn., D, Dillon., C, Arnhild., C, & Jaarsma., B. 2015. Predicting subseismic fracture density and orientation in the Gorm Field, Danish North Sea. Industrial Structural Geology: Geological Society London, Special Publications, 421, 231-244.

Hasanusi,D; Abimanyu,R; Artono,E; Baasir, A. 2004. Prominent Senoro Gas Field Discovery in Central Sulawesi, Indonesia. Proceeding Deep Water and Frontier Exploration in Asia & Australia Symposium, p. 1-21.

Haryono, Susilo., Achmad, Purnomo, Eddy and Tasiat, 2002. Donggi Gas Discovery of Matindok in Banggai Basin Sulawesi: A Success Story by Using a New G & G Approach, Giant Field and New Exploration Concept seminar, IAGI, p. 6-7.

JOB Pertamina – Medco E & P Tomori Sulawesi, July 2001. WFH Field Preliminary Plan of Development (internal report).

JOB Pertamina – Medco E & P Tomori Sulawesi, June 2005. WFH Field Preliminary Plan of Development Revision (internal report).

JOB Pertamina – Medco E & P Tomori Sulawesi, June 2010. WFH Field Preliminary Plan of Further Development (internal report).

Kadarusman, A., Miyashita, S., Maruyama, S., Parkinson, C. D. & Ishikawa, A. 2004. Petrology, geochemistry and paleogeographic reconstruction of theEast Sulawesi Ophiolite, Indonesia. Tectonophysics, 392, 55-83.

Maerten, L., Gillespie, P. & Pollard, D. D. 2002. Effects of local stress perturbation on secondary fault development. Journal of Structural Geology, 24, 145–153.

Pertamina BPPKA, 1996, Banggai Basin, in Nawawi, A., Suseno, A., Heriyanto, N., eds, Petroleum Geology of Indonesian Basins: Principles, Methods and Application Pertamina BPPKA, Jakarta, p. 1-24.

Satyana, A.H., 2006a, Docking and post-docking tectonic escapes of eastern Sulawesi: collisional convergence and their implications to petroleum habitat, *Proceedings Jakarta 2006 Geoscience Conference and Exhibition of SEG-HAGI-IPA-IATMI- IAGI*.