Diskriminasi gas/wet-sand dengan menggunakan kombinasi impedansi poisson (impedansi litologi dan impedansi) study kasus Lapangan Zhezet = Gas/Wet-Sand discrimination by using combination of Poisson-Impedance (lithology impedance and fluid impedance) case study of Zhezet Field

Martin Krisnomurti, author

Abstrak

[ABSTRAK
Identifikasi keberadaan hidrokarbon di bawah permukaan bumi merupakan salah satu tujuan utama dalam eksplorasi lapangan minyak bumi dalam usaha mengidentifikasi keberadaan hidrokarbon. Impedansi-poisson yang merupakan salah satu metoda yang digunakan untuk mendiskriminasi sifat fisis batuan terhadap fluida dengan cara mengamati sensitivitas dari rasio poisson telah diterapkan lebih lanjut untuk menghasilkan suatu metoda turunan yang lebih baik. Pendekatan sifat fisika batuan antara impedansi-poisson dengan log sumuran yang merepresentasikan properti batuan menghasilkan suatu metoda turunan yang dinamakan impedansi-litologi. Sedangkan pendekatan sifat fisis fluida yang terkandung didalam batuan terhadap impedansi-poisson menghasilkan diskriminasi kandungan fluida didalam batuan yang kemudian dinamakan impedansi-fluida. Metoda TCCA – Target Coeffisien Corellation Analysis – yang digunakan untuk mencari koefisien korelasi tertinggi dari sifat fisis batuan terhadap impedansi-poisson telah digunakan dalam penelitian ini untuk menghasilkan log sumuran impedansi-litologi dan impedansi-fluida yang kemudian di propagasi dengan neural network. Hasil propagasi impedansi-litologi digunakan sebagai input untuk kalkulasi atribut koherensi yang diperkuat dengan hasil propagasi impedansi-fluida untuk menghasilkan prediksi sebaran batuan reservoar.
Dari hasil penelitian pada horison FS33 terlihat pola channel yang terbentuk dan tervalidasi dengan data sumur. Demikian juga pada sayatan horison FS37, pola channel batuan reservoar terlihat dengan jelas dan tervalidasi terhadap dua sumur yang dilalui. Sedangkan pada sayatan horison FS42 selain teridentifikasi pola channel reservoar yang terbentuk, teridentifikasi juga batuan karbonat yang divalidasi dengan data sumur dan data batuan inti
<hr>
ABSTRACT
Hydrocarbon identification in subsurface is one of main goals in petroleum exploration so that the litho-fluid content discriminations are a part of hydrocarbon identifications which have been widely applied today. Poisson-impedance which is one of the new methods that are used to discriminate rocks by examining the sensitivity of physical rock properties of poisson-ratio has been further developed

to produce derivatives method. Physical properties approaches between poissonratio and a well-log which represents rock properties can be used to get highest correlation to produce a new derivative well-log named lithology-impedance. As a fluid-rock properties approach between poisson-ratio and a well-log represents litho-fluid content properties produces a new derivative well-log named fluidimpedance. TCCA method –Target Coeffisien Corellation Analyst– is used to find the highest correlation coefficient of the physical properties of rock fluid on the poisson ratio has been used in this study to generate two new derivatives well-log which would be propagated by means of neural-networks. The result of lithologyimpedance propagation is further proceed with seismic coherence attribute as a reflection of geology and stratigraphy forms which are then combined with fluidimpedance propagation result to emphasize reservoir prediction distribution laterally.

The study results of FS33 slicing discovers sand channels pattern and validated by well-log. Similarly with horizon slicing of FS37, patterns of sand channels reservoir are clearly visible and validated against two well-logs that passed. While on horizon slicing of FS42 besides discovering sand channels, carbonate rocks is also identified which is validated by well-log and core sample analyst.;Hydrocarbon identification in subsurface is one of main goals in petroleum exploration so that the litho-fluid content discriminations are a part of hydrocarbon identifications which have been widely applied today. Poisson-impedance which is one of the new methods that are used to discriminate rocks by examining the sensitivity of physical rock properties of poisson-ratio has been further developed

to produce derivatives method. Physical properties approaches between poissonratio and a well-log which represents rock properties can be used to get highest correlation to produce a new derivative well-log named lithology-impedance. As a fluid-rock properties approach between poisson-ratio and a well-log represents litho-fluid content properties produces a new derivative well-log named fluidimpedance. TCCA method –Target Coeffisien Corellation Analyst– is used to find the highest correlation coefficient of the physical properties of rock fluid on the poisson ratio has been used in this study to generate two new derivatives well-log which would be propagated by means of neural-networks. The result of lithologyimpedance propagation is further proceed with seismic coherence attribute as a reflection of geology and stratigraphy forms which are then combined with fluidimpedance propagation result to emphasize reservoir prediction distribution laterally.

The study results of FS33 slicing discovers sand channels pattern and validated by well-log. Similarly with horizon slicing of FS37, patterns of sand channels reservoir are clearly visible and validated against two well-logs that passed. While on horizon slicing of FS42 besides discovering sand channels, carbonate rocks is also identified which is validated by well-log and core sample analyst.;Hydrocarbon identification in subsurface is one of main goals in petroleum

exploration so that the litho-fluid content discriminations are a part of hydrocarbon identifications which have been widely applied today. Poisson-impedance which is one of the new methods that are used to discriminate rocks by examining the sensitivity of physical rock properties of poisson-ratio has been further developed to produce derivatives method. Physical properties approaches between poissonratio and a well-log which represents rock properties can be used to get highest correlation to produce a new derivative well-log named lithology-impedance. As a fluid-rock properties approach between poisson-ratio and a well-log represents litho-fluid content properties produces a new derivative well-log named fluidimpedance. TCCA method –Target Coeffisien Corellation Analyst– is used to find the highest correlation coefficient of the physical properties of rock fluid on the poisson ratio has been used in this study to generate two new derivatives well-log which would be propagated by means of neural-networks. The result of lithologyimpedance propagation is further proceed with seismic coherence attribute as a reflection of geology and stratigraphy forms which are then combined with fluidimpedance propagation result to emphasize reservoir prediction distribution laterally.

The study results of FS33 slicing discovers sand channels pattern and validated by well-log. Similarly with horizon slicing of FS37, patterns of sand channels reservoir are clearly visible and validated against two well-logs that passed. While on horizon slicing of FS42 besides discovering sand channels, carbonate rocks is also identified which is validated by well-log and core sample analyst., Hydrocarbon identification in subsurface is one of main goals in petroleum exploration so that the litho-fluid content discriminations are a part of hydrocarbon identifications which have been widely applied today. Poisson-impedance which is one of the new methods that are used to discriminate rocks by examining the sensitivity of physical rock properties of poisson-ratio has been further developed to produce derivatives method. Physical properties approaches between poissonratio and a well-log which represents rock properties can be used to get highest correlation to produce a new derivative well-log named lithology-impedance. As a fluid-rock properties approach between poisson-ratio and a well-log represents litho-fluid content properties produces a new derivative well-log named fluidimpedance. TCCA method –Target Coeffisien Corellation Analyst– is used to find the highest correlation coefficient of the physical properties of rock fluid on the poisson ratio has been used in this study to generate two new derivatives well-log which would be propagated by means of neural-networks. The result of lithologyimpedance propagation is further proceed with seismic coherence attribute as a reflection of geology and stratigraphy forms which are then combined with fluidimpedance propagation result to emphasize reservoir prediction distribution laterally.

The study results of FS33 slicing discovers sand channels pattern and validated by well-log. Similarly with horizon slicing of FS37, patterns of sand

channels reservoir are clearly visible and validated against two well-logs that passed. While on horizon slicing of FS42 besides discovering sand channels, carbonate rocks is also identified which is validated by well-log and core sample analyst.]