Aplikasi metode pre-stack depth migration dengan asumsi medium vertical transverse isotropy (VTI) pada lapangan ginmie = Application of pre-stack depth migration method with verical transverse isotropy (VTI) assumption in ginmie field

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Abstrak

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Interpretasi merupakan proses yang penting dalam penentuan posisi dan geometri reservoar. Akan tetapi proses interpretasi dalam PSTM masih memiliki keterbatasan imaging dan mengakibatkan kesalahan dalam interpretasi. Terlebih untuk lapangan yang memiliki variasi kecepatan secara lateral. Variasi kecepatan secara lateral akan mengakibatkan pembelokan sinar gelombang yang mengakibatkan perekaman gelombang tidak hiperbola.
Pencitraan bawah permukaan ketika terd apat adanya variasi kecepatan lateral yang besar sehingga menyebabkan terjadinya pembelokan sinar pada batas lapisan, nonhyperbolic moveout, dan struktur lapisan yang kompleks harus dilakukan dengan prestack depth migration (PSDM). PSDM merupakan teknik migrasi sebelum stacking dalam kawasan kedalaman. Dibandingkan PSTM, PSDM lebih memperhatikan travel time.
Untuk melakukan PSDM dibutuhkan geometri reflektor dan model kecepatan interval yang mendekati model bumi sebenarnya. Model kecepatan interval yang digunakan masih diasumsikan isotropi sehingga hasil seismik yang dihasilkan belum akurat secara posisi ataupun image. Oleh karena itu dibutuhkan parameter anisotropi untuk memperbaiki masalah tersebut.
Jenis anisotropi yang akan digunakan adalah Vertical Transverse Isotropy(VTI) dimana sumbu simetri anisotopi berarah verikal. Parameter anisotopi yang digunakan adalah dan . Delta () adalah parameter anisotropi gelombang P pada near vertical sedangkan epsilon merupakan parameter anisotropi gelombang P pada near horizontal. Secara praktis, delta () berhubungan dengan level posisi reflekktor sedangkan epsilon lebih berhubungan dengan koreksi far offset yaitu efek hockeystick
Dengan melakukan PSDM anisotropi, pemodelan secara vertical dan horizontal akan lebih akurat sehingga diharapkan dapat mengurangi kesalahan dalam interpretasi.
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ABSTRACT
Seismic interpretation is a crusial step in reservoar position and geometri determining. But then interpretation process in PSTM data which has limited on imaging will appear interpretation pitfalls. Moreover for field wich has strong lateral velocity variation. Strong lateral velocity variation will bend the ray which will create unhiperbolic moveout.

Imaging subsurface in existence with strong lateral velocity variation causes ray bending at layer boundary, non-hyperbolic moveout, and complex overburden structures needs prestack depth migration (PSDM). PSDM is before stacking migration technique in depth domain. As compared to PSTM, PSDM more does honour to travel time.
PSDM needs reflector geometry and interval velocity model which resemble to the sub surface model. The interval velocity model which is used still assumes isotropy condition. It makes imaging is not precise both in position and imaging. Therefore, anisotrophy media assuming is required to solve those issues.
Vertical Tranverse Isotropy (VTI) is anisptrophicallly medium approximation with vertical symmetry axis. and are anisotropic Thomsen parameter which will be applied in this research. Delta () is near vertical P wave anisotropy parameter whereas epsilon () is near horizontal P wave anisotropy parameter. Practically, delta () related with reflector position (well seismic tie) whereas epsilon related with far offset correction called hockeystick effect.
Application of anisotropic PSDM with the real data shows significant improvement in lateral and vertical positioning that approaches true model, if compare to isotropic PSDM. The image itself is better than the isotropic PSDM that shows strong and continue reflectors amplitudes;Seismic interpretation is a crusial step in reservoar position and geometri determining. But then interpretation process in PSTM data which has limited on imaging will appear interpretation pitfalls. Moreover for field wich has strong lateral velocity variation. Strong lateral velocity variation will bend the ray which will create unhiperbolic moveout.
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Vertical Tranverse Isotropy (VTI) is anisptrophicallly medium approximation with vertical symmetry axis. ε and δ are anisotropic Thomsen parameter which will be applied in this research. Delta (δ) is near vertical P wave anisotropy parameter whereas epsilon (ε) is near horizontal P wave anisotropy parameter. Practically, delta (δ) related with reflector position (well seismic tie) whereas epsilon related with far offset correction called hockeystick effect.

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