## ABSTRACT

**STUDY OF SUBSURFACE IMAGING WITH *CONSTRAINED VELOCITY INVERSION* DAN *GRID BASED TOMOGRAPHY* MODELLING METHOD AT LINE GMR165 IN CENDRAWASIH BAY**

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Prestack Depth Migration (PSDM) method has been applied to image the subsurface at Line GMR165 in Cendrawasih Bay. Imaging and positioning is the most important issue in seismic data processing. In the complex area case with lateral variation velocity , PSDM has more benefit than PSTM . It cause the ability of PSDM method that can focus just for one reflector when lateral velocity change.

In this study used *constrained velocity inversion* modelling method. This method is designed to make an *initial interval velocity* model for PSDM and updated in *grid based tomography* to got the best velocity so that the result had continuous PSDM reflector with flat gather. That interval velocity applied to PSDM to get seismic image section and compared with PSTM (prestack time migration) seismic section based on it's image and velocity model analysis. Seismic section of PSDM shows a significant image enhancement. It is able to assure the reflection pattern at the horizons with strong lateral velocity variations and makes image resolution more coherence than seismic section of PSTM. This study is very valuable to build exploration concept and development area, especially in a complex structure with strong lateral velocity variations.



Keywords: *Pre Stack Depth Migration, Constarined Velocity Inversion, Grid Based Tomography.*