

ANALYSIS OF 3D SEISMIC IMAGES GENERATED USING FIBRE OPTIC CABLES – DISTRIBUTED ACOUSTIC SENSING) SEISMIC DAS – A FIRST IN AZERBAIJAN FROM THE AZERI FIELD

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The use of fibre optics as a ‘within wellbore’ technology is moving forward rapidly. Such fibres have been used successfully to ‘listen for’ sand production within the completion. This is in addition to measuring temperature (Distributed Temperature Sensing) which was the primary reason for installation. In 2016 these fibres were tested in Central Azeri for the acquisition of seismic data. The fibres are used as the ‘recording device’ whereby an external seismic waveform deforms the fibre and causes backscatter in the optical beam within the fibre and these perturbations are related to strain and particle velocity of the seismic wave and therefore used to measure seismic data. The trial utilised fibres deployed in 4 wells in Central Azeri – two oil producers and two gas injectors. Only one well (gas injector) was shut-in during the 8 day operation. The seismic energy being recorded was delivered by Caspian Geophysical’s Gilavar vessel, which was recording a 4D survey over ACG. In 2016 at this conference, BP reported the successful acquisition of these data and showed fast track 3D seismic images. Since then, final seismic cubes have been generated and analysed. It is the results of this work that are shown here principally from the seismic interpreter’s viewpoint. 3-way comparisons of the surface seismic, synthetic seismograms and seismic DAS are presented as well as key data quality metrics. Approximately 30 wells in the ACG field have permanent fibres deployed which could be used for such acquisition. As this successful technology trial shows, the future is bright for fibre optic deployment.